

The Commercial Car Journal

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Commercial Car Manufacturers' Convention

Keynotes of the Meeting in New York Were Service to the Government
and Improvements of the Opportunity the Industry Now Faces

[The presses are being held for this report as it is being written, which precludes the covering of the whole meeting in the space reserved in this issue. The remainder of the report will be given in the February number.—Editor.]

TRULY historical in its significance at the present juncture was the meeting of commercial car manufacturers just held in New York. At an all day session in the headquarters of the National Automobile Chamber of Commerce, 7 East 42nd St., Tuesday, January 8, addresses and papers were heard and discussed that revealed with remarkable distinctness the stupendous part this industry can play in the nation's present biggest job—the war—and when that is over the place it will continue to occupy as second only to the railroads (if indeed not even more important) in transportation work.

The three purposes of the meeting as set forth on the program admirably index the thought and text of the discourses:

First—Service to the Government, cooperating with its motor truck program;

Second—Service to the Government in assisting to relieve the railroad congestion by the use of motor trucks;

Third—Service to the Motor Truck Industry so that manufacturers may better understand the demands to be made upon them and be better prepared to meet them.

Transportation by Trucks Never so Prominent

Windsor T. White, chairman of the N. A. C. C. Commercial Vehicle Committee, presided and introduced as the first speaker of the morning session, Charles Clifton, president of the N. A. C. C., whose remarks took the form of an address of welcome and served to outline the intent of the meeting and the reasons for calling the delegates together at this time when the Government is in need of the cooperation of every industry and every individual. As he said, "There is no industry in the United States that is better prepared for the situation which faces the country than the automobile industry." Continuing he spoke of the spirit of today being a spirit of service, service of all kinds and now of late an added kind—national service. In his concluding remarks he voiced another outstanding truth—that "there never was a time when motor truck transportation stood for so much as it does today," and urged all to do their part, not for personal profit, but civilization's sake.

The first regular paper was one on the subject of "Maintaining a Record of Unselfish Cooperation," by George M. Graham, assistant commercial manager of the Pierce-Arrow Motor Car Co.

It was left to him to specifically enlarge on the planks of the platform of the meeting as already stated and definitely

explain the exact purpose in calling the meeting. Commenting on the war record of the motor truck industry to date, he characterized it as something rightly to be proud of, as a performance marked by speed, efficiency and unselfishness, going back to the time of the Mexican invasion and even before that when trucks were rushed to Pershing and continuing through the work of designing the standardized military truck and now producing it.

To Co-operate on Terminal Congestion

The object of this meeting, he then explained, was to offer suggestions to the Highway Transport Committee, to cooperate with the Government in the matter of transportation, especially as it relates to terminal congestion. Relief of this congestion is imperatively needed in the work of winning the war, because accelerated production is of no avail when the goods—clothing, fuel, food, munitions, etc.—cannot be moved with required rapidity.

One of the things the manufacturers and dealers can do is to train transportation experts and turn them loose to solve the local problems of hauling and delivery. General remedies will not apply; each situation must be studied by itself.

As the speaker indicated, it was the desire of Mr. Chapin, chairman of the Highways Transport Committee, under whose inspiration this meeting was virtually called, to have the subject of freight congestion relief particularly discussed. Coming directly to the point, as he closed, Mr. Graham said, "We simply present ourselves at the call of our superiors. We say, 'We have organized, we have facilities and we place them entirely at your disposal. We merely ask that you shall direct. We merely say that in this, as in everything, we have only one purpose, one task at this time, and that is the service of our country until this crisis shall have passed.'"

Major Edward Orton, Jr., of the Quartermaster Department, was next introduced and spoke on "Delivering Army Trucks by Highway."

First, as showing somewhat the extent of the task, he explained that the army has bought approximately twenty thousand trucks and has ordered some ten thousand more, and there are in sight the requirements of from ten to fifteen thousand in addition, not yet placed. The average distance of the assembly points to the seaboard is five hundred miles.

The idea of highway delivery of these trucks was suggested by the driveaways last winter and spring of automobiles from factories to dealers, of which so much was published at the time when freight congestion was bothering.

The army has been laying plans to resort to the same expedient if the emergency arose as it now has, so when the time came there was no delay in starting the movement.

The conveying of themselves and even capacity loads in addition is of consequence as a help to the railroads only because of present conditions. In normal times the railroads would not be embarrassed by carrying this amount of freight, but just now every bit that can be spared counts.

Driveaways Will Train and Harden the Drivers

Of no less advantage is the training of the drivers handling the trucks, so that they will be expert when they get into more intimate war work, when they are actually at the front. The trucks already in service or at least those retained in this country have been too few to properly train the available personnel for this class of service.

Probably as the plan will work out not all green men will be sent on a driveaway (meaning by green men those who have not had a cross-country trip with the particular truck in question), but some who have been through the experience will accompany each train and act as instructors to the newer men.

A third effect of the highway delivery of the trucks is its object lesson to the American people to more fully awaken them that we are engaged in war, so many failing to appreciate it because the battlefields are on another continent. It will be a little touch of physical contact with the war to those at least who live along the routes selected.

Still another good result of the driveaways will be the impress it will make on the people of the value of good roads. It will teach them the possibilities of their highways for transportation work that they have been accustomed to think could be done by no other medium than the railroads. It is fair to assume that even in future peace times the roads will be better kept for this lesson. Certainly an enhanced idea of the value of the work of the various associations for highway improvement and extension will result. What the Government is doing is giving a meaning to highway transportation that would otherwise have been a much longer time in arriving, by showing the military significance.

Major Orton then proceeded to recount what is already familiar to the readers of this journal, the work of preparation, selecting the route, getting state officials to work conditioning the roads for heavy truck use, etc. Especially interesting were the more intimately related details—medical attendance, provisions for feeding the men, supplying fuel, etc., for the trucks, sleeping accommodations in zero weather,

and the like. The intricacies of the problem were further hinted at in selection of locations of parts factories and assembling plants and the system involved in handling the truck loads. Finally the War Department organization for it all was outlined and with considerable interest to those unacquainted with it.

The account of the first trip may be passed over because it forms the subject of an illustrated article a few pages farther on in this number.

The discussion following the major's paper took up questions of size of units in a train and the other practical points in the actual experience of convoying a train of trucks. Quite a little was added by the speaker to his previous remarks, with regard to the preparatory training of the enlisted men in the truck companies and their selection for given tasks as based on their recorded past experience.

From this point on detailed report will have to be deferred until next issue, but a brief outline will be given here of the remainder of the program.

In the morning session there were three more addresses, the speakers following in the order named: Hugh Chalmers, of the Automobile Industries Committee; Christian Girt, director of production, Military Truck Division, Quartermaster's Department, and H. L. Horning, of the Automobile Section of the War Industries Board.

Following a buffet luncheon the papers and discussions were resumed. The program of the afternoon session was as follows:

"Work of Highways Transport Committee," by Roy D. Chapin, chairman, Highway Transport Committee.

"Motor Trucks in Short Haul Work," by George H. Pride, Heavy Haulage Co.

"Legislation Affecting the Use of Motor Trucks," by Windsor T. White, Chairman N. A. C. C. Commercial Vehicle Committee.

"Highways for Heavy Hauling," by George C. Diehl, Chairman Good Roads Committee, American Automobile Association.

The Commercial Vehicle Committee, under the auspices of which this was held, is made up as follows:

Windsor T. White, Chairman (White).

Alvan Macauley (Packard).

H. Kerr Thomas (Pierce-Arrow).

P. D. Wagoner (General Vehicle).

M. L. Pulcher (Federal).

About sixty-five companies were represented at the meeting, 110 delegates attending.

S. A. E. New York Dinner

Points Out the War Activities of the Societies

More than a thousand engineers representing the internal combustion engine industries of the United States as represented in the membership of the S. A. E. gathered Thursday evening, January 10th, at the annual dinner at the Biltmore Hotel, New York.

The speakers of the evening were George W. Dunham, president; Charles F. Kettering, Capt. M. E. De Jarny, of the Italian Army, and H. E. Coffin, chairman of the Aircraft Board.

The speakers were introduced by John Kendrick Bangs, whose introductions were

pointed, extremely witty and in the true Bangs style. The subjects of the evening were in view of the times, preparedness, and the part which the Society of Automotive Engineers has and can play in this great work. It was a most enthusiastic and patriotic meeting.

Torbensen Axle Co., Cleveland, O., held a meeting recently of its department heads and foremen, with the object of forming a club, to be known as the Foreman's Club of the Torbensen Axle Co. The purpose of the club is to unite the foremen in a business and social manner for their own and the company's benefit.

Enemy Alien Draft Payments

The War Trade Board has authorized the payment of drafts accepted on or before December 14, 1917, drawn on funds to the credit of a person who is an "enemy" or "ally of enemy," or acting for or on behalf of an "enemy" or "ally of enemy," or on which such a person appears as drawer or endorser, when drafts are presented for payment in the United States, provided, however, that when such drafts are collected for or on behalf of any person who is an "enemy" or "ally of enemy," etc., the proceeds of collection shall be at once reported by the person making such collection to, and be held subject to the disposition of, the alien property custodian.

Motor Truck in Highway Freight Service

The War Has Been the Means of Hastening the Recognition of the Commercial Car's Value in Intercity Transportation

NEVER in its history has the commercial car enjoyed such widespread attention as at present, and it is increasing by the moment. The daily newspapers by their contents are the best index of the popular topics of the day, and for the amount of interest taken in it transportation of commodities of all kinds is second only to war news, excepting local affairs. Everywhere the popular cry, showing it to be the consensus of opinion, is that the motor truck is the solution of the present complicated transportation problem. Innumerable quotations could be made from the statements of authorities in various fields and from the daily press bearing out this truth. Several such are included in the following symposium of matter relating to the motor truck in highway freight haulage.

It has been deemed as most timely to concentrate attention on this subject just now because of its enormous importance to the commercial car trade. Possibly the emphasis is not needed since the discussion is already so general, but unless the trade does more than remark the situation it will not be positioned to cope with the demand that is coming, and very soon, if indeed it is not already here. The profoundest study of ways and means to take advantage of this greatest opportunity that was ever afforded the industry is more than justified—it is imperative. From all considerations—most of all the winning of the war, especially as this depends so intimately on the efficiency of commercial activities—now is the accepted time for car and parts makers, distributors, dealers

and all now involved or able to become so in truck business to learn wherein they can take the most effective part and then get busy with the least possible delay. Plainly speaking, we are poorly prepared. It is distinctly up to American enterprise to compensate as far and as quickly as possible for this lack.

Hand in hand with all that is done in this field must go the work of the road builders. The Government, Federal and State, is energetically directing work of this kind now, but all the time that can be spared from its own efforts should be devoted by the car industry to furthering the Good Roads movement.

As all know by this time, there is a new guiding genius—the Highway Transport Committee—at Washington which is undertaking a gigantic task and has masterfully begun it, that of getting the motor truck freight in operation. It can be most directly effective only in the military phase of it, but it can set a striking example to the civil interests of the even greater possibilities for them.

Wonderful things are ahead of us, but without dealing further with generalities let us turn to just a few of the specific events that so widely reveal the potentialities.

Naturally entitled to first recounting is the auspicious beginning, already more than experimental, made by the Highway Transport Committee in the driving of the military trucks from the places where they are built to the Atlantic Coast laden with munitions.

Over the Road From Factory to Seaboard

The Government Makes First Try-Out in Comprehensive Scheme of Highway Transportation by Motor Truck

IN the previous issue, something was related of the preliminary work of the newly-appointed Highway Transport Committee. This consisted of the laying out of a route from Detroit to the Atlantic seaboard and then the urging of the authorities of the states passed through to see that the roads were adequately surfaced and kept passable during the winter.

For weeks the Lincoln Highway Association has been co-operating with the Highway Transport Committee in laying out tentative routes between the various truck production centers and the Atlantic coast, and determining upon their feasibility for the heavy truck traffic which is contemplated. For an in-

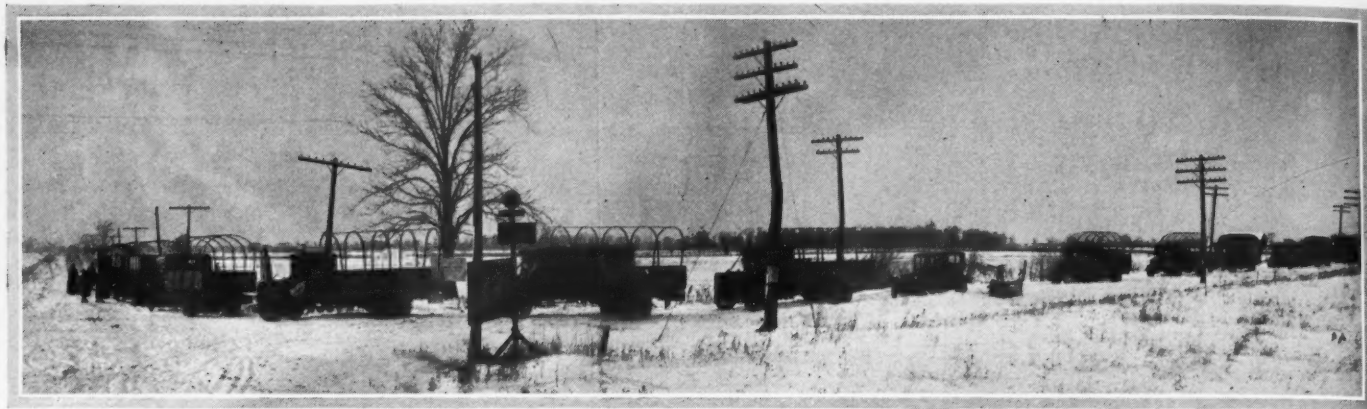
spection of those suggested two government engineers, representing the Engineering Corps of the United States Army and the Office of Public Roads, Department of Agriculture, attended by H. C. Ostermann, field secretary of the Lincoln Highway Association, completed the drive from these points to the coast. In each state crossed, a state representative accompanied the Government engineers over the route in his state and noted the improvements desired by the War Department. As soon as the recommendations of the Government officials were received and the route mapped out, the states were kept busy doing their part in getting their roads in better shape, where necessary, and the first

"driveway" from factory to coast was begun.

December 14th the first Government truck train of 30 loaded transports left the plant of the Packard company, at Detroit, bound for "an Atlantic port." An escort of seventy-six men of the 308th regulars of the Quartermaster Corps accompanied the train. These were the first men of the new National Army to be engaged in actual service. The company was in command of Capt. Bennett Bronson, of the Reserve Corps, and Lt. C. A. Riley, of the Quartermaster's Department.

The trucks are of 3-ton capacity and are fitted with bodies built according to the Quartermaster's Department speci-

"To Take Advantage of this Great Opportunity Afforded the Industry is Imperative"



A Halt for Their Pictures at a Turn in the Road, Showing the Trucks Out in the Open Country Shortly After the Start

fications. Two are 250-gal. tank cars, carrying gasoline and oils, and so equipped that they can be used as filling stations whenever desired. Another is a kitchen truck which carries supplies for the trip and all the necessary camping paraphernalia, although the men were quartered at armories in the various cities en route.

The drivers were all experienced army men who were ordered to Detroit from Camp Sherman, Chillicothe, Ohio, and from Marfa, Texas. The route was from Detroit to Cleveland, Pittsburgh, Philadelphia and then to "a port." The endurance powers of the trucks was given a thorough test, for much of the way it was necessary to plow through snow-drifts where often shovels had to be brought into play in order that any headway could be made. From Detroit to Toledo it was a continuous battle with the elements, which made anything resembling speed impossible, while the climb over the Allegheny Mountains was equally strenuous. The



Two of the Trucks Before Leaving the Factory, Showing Them as Prepared for the Journey With Loads of Spare Parts for Similar Trucks



The Train Was Accompanied by Two of These Tank Cars so That the Trucks' Gasoline Supply Tanks Could be Refilled Wherever Necessary

expedition was joined at Warren, Ohio, by one of the Akron-Boston trucks of the Goodyear Tire & Rubber Co., fitted with the necessary equipment to assist the trucks over the steep grades and to render practical assistance in getting the trucks back on the road after bad skids.

The journey of over 600 miles was completed December 28, with the arrival of the trucks at Baltimore. Allowing for three days and a half that the trucks did not travel, about fifty miles was the daily average distance covered. Those in charge of the experiment consider this sufficient to warrant recommending that other trucks be sent through in the same manner, thereby helping to relieve the railroad traffic situation.

Under the comprehensive plans of General Baker, of the Quartermaster's Department, it is expected that as rapidly as possible, other routes will be connected and improved from the vari-

Other Trucks Will be Sent Through to Help Relieve the Railroad Traffic Situation



Snap Shots of the Trucks En Route Giving an Idea of the Going and About the Distance Maintained Between Them.



Considering the Weather and the State of the Roads It Is Remarkable That Fifty Miles a Day Was the Average.



Several of the Trucks had Significant Banners on Their Sides Like One Here Shown

ous other truck production centers through to the Atlantic coast ports. Railroad congestion and the increasing seriousness of the car shortage has made necessary the consideration of every possible means of relieving the railroads and it is more than probable from the success of the first trip that the entire 30,000 trucks being produced for the Government will be driven to their points of shipment, carrying capacity loads, thus affording much relief to our over-burdened railroad facilities.

The cars in the Packard train were laden with 60 tons of spare parts for similar trucks already in service, it being part of the test to see whether this method of quick delivery of Detroit munitions to the seaboard would be as successful as anticipated. It is quite likely that any of the trucks not needed for shipment to France at once will be returned to their factories or other places with loads westward, so that they

may bring more munitions back to the coast, and thus be kept in motion as a Federal truck transport system.

The significance of this move by the Government should not be overlooked. It reflects the growing recognition of the part which the commercial car must play in the relieving of the serious traffic congestion on the nation's railroads. Not only will the truck prove its efficiency as a freight handler, and thus firmly entrench itself in the Government's inter-city service, but it will exhibit to the officials the utter necessity of good roads between the principal points of the country so as to make the truck method of freight transfer as efficient as possible. Truck men have no doubt that the Government will find



This First of the Class A Military Trucks Followed the Packard Train a Week Later

Good Roads are Necessary to Make the Truck Method of Freight Transfer Efficient

this method of getting supplies to the coast much cheaper than moving the same things by rail, once the trucks get to running on regular routes and on regular schedules, with proper supply stations along the way.

A week later, to a day, from the time the Packard train left Detroit, the first Model A Liberty truck, completed by the Denby Motor Truck Co., left De-

troit for Washington, following practically the same route as the Packard train. The Model A is rated by the Government as 1½-ton, but in size and general appearance would take its place with the average 3-ton truck. It is equipped with the regular army transport body, which gives the impression of being built for the hardest kind of work. Lt. E. C. May and Lt. Jordan

Cunner, of the Quartermaster's Department, who supervised the construction of the vehicle, were in charge when it left Detroit for Washington, together with E. E. Wemp, Chief Engineer of the Denby Co., who was a member of the designing committee. At Cleveland and Philadelphia the truck was met by similar trucks made by the White Co., of Cleveland, and the Autocar Co., of Ardmore, Pa.

Test of Trucks for Troop Movement on Dixie Highway

A test was recently made between the cantonments at Atlanta and Chattanooga over the Dixie Highway to see how rapidly the motor truck could move troops. The results were surprising to the army officers, as greater speed was shown than possible either in the movement of cavalry or the movement of troops by railroad and many advantages beside speed were demonstrated.

The probable outcome will be greater activity in road construction to make it possible to move troops without any regard to the length of the march or fear of fatigue of the men. The army will be entirely independent of rail service for small troop units and what is of least importance, the cost of operation will be comparatively small. Practically one day's operation by motor truck corresponds to four days of forced marching by cavalry.

One of the features of the test was the trying out of the bodies for troop transportation by motor truck designed by Lt. Col. Hugh J. Gallagher, Depot Quartermaster at Atlanta.

In the test 132 miles of good and bad foothills were covered in five hours and thirty-three minutes with safety and comfort to the men. The return trip was made in five hours and two minutes.

At times the speed of the transport was as high as forty-nine miles an hour. While this is faster than would be undertaken by a large number of trucks operating on a single road, it still shows what possibilities there are in motor troop movement. The entire route of the test was on the line of Sherman's march. This test of troop transportation also showed what might be accomplished in an emergency in the way of rushing out details of men to patrol or skirmish duty at points not quickly reachable by cavalry or railroad.

The balancing of the load in the Gallagher type of body is one of the principal advantages, making high speed possible. The troops sit back to back lengthwise of the body and their rifles, when not needed in their hands, may be stored in rifle chests between the backs of the seats. Foot rails and arm rails guard against the passengers being thrown out when rounding corners at high speed or moving rapidly over rough roads.

The foot rail is hinged and when lowered serves as the step in mounting the

truck. After the soldiers are on board it is raised and locked in position to act as a brace for their feet while riding. All of the impedimenta usually worn by a soldier on the march, such as blankets, extra underclothing, shoes, etc., are carried in the transport so that the necessity of extra baggage wagons is eliminated. This equipment is carried in lockers under the seats, easily accessible when riding in the truck or standing on the ground. Provision is also made for five hundred rounds of ammunition for each man, and in the rear of the truck is a compartment holding three days' supply of non-perishable components of rations, such as coffee, sugar, bacon, baked beans, hard bread, etc.

Government Must Aid in Extending Good Roads

Before the big war is over the United States Government will see the absolute necessity of seriously and energetically giving its maximum aid toward building up a great national road system.

Not, by any means, to build roads as military highways for troop movement—although this is showing itself a necessity and will be made more apparent before the end of military operations—but to relieve the rail lines in the transportation of every sort of merchandise.

And, on the other hand, highway transportation of passengers and freight must be greatly amplified in order that the self-propelled vehicle may in greater degree attain its maximum utility in the present congested condition of our avenues of communication.

Commenting on the subject, Dr. H. M. Rowe, president of the American Automobile Association, said:

It is inevitable that road improvement should attract unusual concern, despite labor difficulties and the temporary cessation in the shipment of materials. I am of the belief that the newly created Highway Transport Committee, of which Roy D. Chapin, of Detroit, is the chairman, will make clear to the Council of National Defense that the roads problem demands a serious and substantial acceleration at this time, so that both motor trucks and passenger automobiles can serve to the extent possible with their coun-

try-wide total of four and a half million strong.

Just think how many passengers and how much freight 4,500,000 motor cars and trucks could transport over a nation-wide network of concrete highways!—*Boston Sunday Advertiser and American.*

Keep Road Open for Trucks

The plan of the Buffalo Automobile Club to have the ten-mile stretch of road between the city line and the village of Clarence kept open for auto traffic during the winter has been approved by manufacturers in Lockport, who wish to use trucks this winter between their city and Buffalo and would use part of the road the automobile club contemplates having kept open for traffic. The freight congestion is responsible for the attitude of the Lockport men's interest. They will have 15 miles to keep open themselves.

Thousands of bushels of fruit rotted in the orchards of the Lockport district last fall because the railroads could not furnish cars to haul them to Buffalo, the natural consuming center and distributing point, and while a few trucks were put in use to save as much of the crop as possible, only a comparatively small portion was thus got to market. One of the men who used a truck was W. D. Schaffer, of Newfane, near Lockport. Mr. Schaffer had 2000 bushels of peaches and all that he could ship were 34 bushels a night during the season, these being sent to Buffalo by motor truck. During the three weeks during which the fruit could be handled, about a third of the crop was thus sent to Buffalo by truck, a drive of 25 miles each way.

Town highway officials have begun to clear away weeds, brush and walls, and other obstructions which cause snow to form in drifts, and snow fences will be placed along the route. The Buffalo Automobile Club has a motor snowplow which will clear the highways to a width of 20 ft., and at a recent meeting of about 100 business men of Buffalo, Lockport, Clarence, Pendleton, Swormsville and Amherst, a fund was started to provide more snow removing machinery.

George C. Diehl, who presided at the meeting, suggested that in addition to benefiting the communities involved, keeping these highways clear may well serve as an object lesson for other parts of the state, and perhaps result in a statewide movement to keep highways open to travel throughout the year.

One Day's Operation by Motor Truck Equals Four Days' Forced Marching by Cavalry

Highway Improvement a War Necessity

Pleas From Various Quarters for Truck-Worthy Roads to Expedite Movement of Army Supplies and Manufacturers' Materials

At the present stage of the war this country's task is divided into two great parts. One consists of the military operations in Europe. The other, fully as important, only non-military in character, comprises the work that must be done in this country. This latter includes not only the production and transportation of supplies of all kinds for the troops, but also the maintenance of the country's industrial and commercial life which, if discontinued, would shut off the fund without which no war can be prosecuted. In all of the work in this country, roads play an important part. They are necessary to the ordinary industries in times of peace and the extraordinary exigencies in times of war, and are especially important in the feeding of the civil population and the military establishment of the United States and the allies.

The food problem is quite as much a matter of distribution as of production and if, as has been so frequently stated, the food produced and distributed by America is to decide the present conflict, there is certainly every reason for doing all that is possible to provide better transportation facilities. Food must be carried by railroad or by motor truck. The motor trucks cannot be operated unless there are roads, nor can railroads obtain freight without roads.

Road building must go on. Not only to take care of present needs, but to prepare for future contingencies.—*Good Roads.*

Truck Trains Between Detroit and Toledo

That motor truck trains will be operating on regular schedules between Detroit and Toledo, a distance of about 60 miles, by the first of the year, is now practically certain, and manufacturers and business men there are very much interested in the project, which marks the beginning of a new means of getting around the freight congestion that has been a constant source of annoying delays the last three years. Toledo is the gateway for shipments to and from Detroit, for many points in the south and in Ohio, and the new means of transportation will meet with hearty support at both ends of the line.

A company is being formed in Detroit to operate the new gasoline freight line. Already officials of the proposition have been besieged with inquiries for rates, schedules, weight of shipments permissible and other points relative to the new scheme. The promoters of the project have been assured the support

of many large business houses there, and it is thought that the new truck line will be able to charge lower rates than the railroads, to say nothing of the vast improvement in the service.

G. Edward Bleil, manager of the Grasser Motor Co., Detroit distributors of the Republic line, is one of the leading spirits in the venture, and he is ably fitted to cope with the proposition. He is much interested in transportation problems, and an exponent of good roads, being secretary of the East Michigan Pike Association.

It is expected that heavy duty trailers will be used in connection with the trucks. Four trains each day will be run each way. Each train will consist of a 5-ton truck with two 5-ton trailers in tow, thus making a total tonnage of 120 tons each day between the two cities. This is the proposed winter schedule, although in summer more trains might be run should conditions dictate a larger fleet. The tentative schedule calls for four truck trains to leave Detroit between 5 a. m. and 2 p. m., and four to leave Toledo between 6 a. m. and 3 p. m., and it is expected that six hours will be required for the run.

Centrally located depots are to be established in both cities for receiving and delivering of the freight, and some such general plan of handling it at these terminals will be employed as is pursued by the railroads.

Importance of Lincoln Highway

The following letter has been sent to the proper authorities in each of the states traversed by the Lincoln Highway from the Atlantic to the Pacific by the Section on Co-operation with States of the Council of National Defense.

It is an indication of the importance and need of road improvements as an auxiliary of the greatest value in forwarding the country's war interests:

With the constant increase in traffic across the country, the trans-continental highways are becoming increasingly important. Of these the most advanced is the Lincoln Highway, a large section of which lies in your state.

We ask your help to put it in first-class condition. The Lincoln Highway, running from ocean to ocean, can be made a useful adjunct to railroad transportation. In good condition it is available for the movement of freight by motor truck. In particular, auto vehicles, destined for the use of the Government or our Allies, can be run over it to the seaboard on their own power, and in so doing can carry

freight, thus making a considerable saving to the railways.

We ask that you consult with your State Highway Commission and interest it and your local organizations to make whatever immediate local repairs are necessary to put the Lincoln Highway in usable condition and then to keep it so.

Assurance has been received from most of the states, that every endeavor will be made to comply with the request in full. Action was first taken in the matter in Ohio where the County Commissioners assembled at the Capitol in response to a call of Governor Cox and promised immediate and united action to put the Lincoln Highway in good condition. Like encouraging reports were returned from the other states from which replies had been received.

Let Motor Trucks Do Short Haul, the Railroads the Long Haul

A Short Haul Embargo Suggestion Respectfully Submitted

Copyright 1917, Star Company

The wise gentlemen in charge of the railroad situation are doing their best and having hard work.

Why not let motor trucks do the short hauling, wherever roads are passable, and let railroads concentrate on the long hauling?

It is the short haul that bothers the railroads.

A long train of freight cars must stop frequently, lose time and block the tracks, dropping one or two cars here and there, to meet the short-haul demand.

As these cars are stopped, traffic is congested, part of the power of the locomotive and of the value of the crew is wasted, as the locomotive and crew with each car dropped are doing less than they might be doing.

Let a committee of railroad men and business men, with careful consideration of the needs, interests and rights of each, look into the question of a short haul embargo.

Where the motor truck can do the work, free the railroad to that extent.

The modern truck with a trailer can carry a load almost unbelievable on any fairly good road.

Every ton carried on short haul by a truck means one ton less for railroads to carry.

"The Lincoln Highway Can be Made a Useful Adjunct to Railroad Transportation"

A short haul embargo would mean great saving in demurrage, releasing freight cars for use in other ways, preventing use of freight cars for storage during slow unloading.

It is notorious that the small freight shipments, for short hauls, tie up cars, cutting down their value at least 50 per cent.

In hauling by the motor truck there is no demurrage. The load goes from the point of loading to the point of delivery. Every minute is saved, for the trailer can be dropped and the truck can go for another load while the dropped trailer is unloading.

The cost of hauling by motor truck has been steadily reduced and is now very low. Allowing for demurrage and the fact that there is no hauling from the railroad siding to the point of delivery, it is safe to say that for the short haul the motor truck is more economical than the freight train.

The engine used by the modern freight hauling automobile is the highest product of science, surpassing in efficiency and in adaptability the old locomotive.

It is realized by government and railroads that the latter have not cars enough to carry the freight of the country.

Important industries, built up slowly through long years and of the highest value to the nation, are threatened with destruction because the railroads cannot take care of the government work and at the same time supply these industries, provide for their incoming and outgoing freight.

There is only one solution—to compel the motor truck to do as much of the nation's freight carrying as possible.

The quick road to this success would be an embargo on the short haul. Let the motor truck take care of freight within twenty-five to fifty miles of big cities, and even longer distances. Let railroads concentrate on the long haul—and thus save the constant stopping of trains and shunting of freight trains, save the use of freight cars as storage warehouses on sidings, unload upon the motor truck the hardest, most expensive short haul work of the railroads and in spite of war, railroads and motor trucks combined will do the nation's work and make it unnecessary to hinder, cripple or utterly destroy the national industries.

These industries will be needed when the war ends, and when the task of this nation will be to substitute, for fighting with bullets, fighting with business brain.

Traffic by Trucks

Attention of state highway builders has been called to the necessity of co-operating with the Federal defense commission and doing everything to maintain open roads for interstate truck traffic. Congestion of the railroads and the placing of an embargo on many classes of freight argue in favor of the operation of some kind of service by motor-driven vehicles. By adopting the Lincoln or the National highways, or both of them for that matter, state highway departments can concentrate

much of their effort and maintain roads passable throughout the year.

The use of motor trucks for long hauls has increased materially within a short time, a condition brought about by freight congestion, which made the delivery of the cars uncertain in distant points. To guard against delay machines were driven overland. At first they were sent empty in charge of a driver, but a demand arose from shippers of small packages to carry these, and in time every new car starting from the factory carried its load or was directed to stop at some point and take one on. Necessity showed the possibilities of the motor truck in service covering several hundred miles.

It may be that the Government will want to try out the suggestion of a great national military road and ascertain if it could be operated with success. This is the time for such experiment, and the actual work of road maintenance under most trying conditions of weather and traffic will force the perfection of some system of scientific construction, of the adoption of a standard and adequate width, and the institution of other improvements that are recognized but which are impossible of acceptance and enforcement. A conference of state engineers is now on in Detroit and it is not unlikely that plans will be formulated for united work with the Government in establishing practical intercity and state highway connection.—Editorial from Pittsburgh, Pa., *Sun*.

"Every Interest Depends Upon the Building of Highways"

The railroads are absolutely unable to handle the traffic. It is our bounden duty, as a nation, to find some way to increase transportation facilities or else the whole transportation business will go to smash.

It is absolutely necessary to construct highways, and to do it with all possible energy. Any lessening of highway building adds to the burden of the farmer in getting his material to the city and in delivering his products to shipping centers.

The motor truck must take the place of freight cars in many cases. The automobile must take the place of the passenger car wherever it is possible. Highway work is important and vitally so, and river transportation must be developed, because these two aids in the transportation field may prove a deciding factor in the war. The money, the men and material used in developing highways and in improving waterways would be as wisely utilized for war purposes as though the money, men and material were put into the making of shells.

We have got to go back to the farmer for the food stuff. The farmer cannot produce an adequate supply if cut off from railroad transportation with a burden of ever increasing expense by reason of increasingly bad roads. The failure to maintain existing highways and to build new ones adds to the burdens of the railroad and ultimately results in a more complete breakdown of the system than we have seen.

Every interest of the country, from that of the farmer to that of the consumer and that of the railroad itself and that of the munition manufacturer depends upon the building of highways.—*Manufacturers Record*.

Freight-Cars vs. Motor-Trucks

"Can you fancy asking a railroad to hold its freight-trains for a few minutes to enable you to get on one more much-needed shipment?" This question, propounded by Carlton R. Blades, traffic manager of the Geo. R. Keith Company, in Factory (Chicago, October), explains in brief compass his argument for the use of motor-cars for freight-transportation. His company has factories at Boston, Brockton, and Weymouth, Mass., and it is not unusual to receive a long-distance call from one of them involving delay in the dispatch of a truck and the consequent saving of several hours in the receipt of needed material. Mr. Blades says that in addition to superior service, the savings on transportation amount to anywhere from a few cents a hundred up to more than 60 per cent. He writes:

"Motor-trucks have effected a saving in cost as well as a betterment of service. But this is getting ahead of the story. To begin at the beginning, we have our main factories in Brockton. There is a branch plant in Weymouth, about seventeen miles distant by road, and there is another in Boston—roughly, twenty-five miles away.

"If we rely on the railroads between Brockton and Weymouth a shipment goes to Boston, where it has to be teamed from the in-bound freight-house to out-bound freight-house (because it is in less than car-load lots). Then it is freighted to Weymouth, where it is teamed to the factory. Freight handled in this way between Brockton and Weymouth costs thirty cents a hundred.

"Costs with the motor-truck on this trip run about ten cents a hundred, or one-third of the freight costs between Brockton and Weymouth. But even this large saving is outshadowed by the large value of service given.

"On only two days of this last year was the service interrupted, and that was one day at a time after two separate severe snow-storms.

"On the alternate day the same truck goes between Brockton and the Boston plant. It leaves Brockton at eight o'clock with the same character of load as in the Weymouth case and makes the run in about two and one-half hours. It leaves Boston on the return trip at one o'clock and gets to Brockton at 3.30 or 4 o'clock.

"We save only a few cents a hundred on this haul over freight, but this Boston schedule keeps the Weymouth truck busy and gives the Boston factory far better service than the railroad could.

"Furthermore, this motor-truck service enables the factories to work much closer as to the stock of supplies than would be possible with freight methods."—*Literary Digest*.

"Compel the Motor Truck to Do as Much of the Nation's Freight Carrying as Possible"

THE COMMERCIAL CAR JOURNAL

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Extending Commercial Car's Usefulness

IT is hardly necessary here to call attention to the group of articles in the forepart of this issue relating to the use of motor trucks in highway freight service. The most casual reader of this number could hardly overlook them. What we would seek to impress, however, is the chance for the dealer to improve the present situation to his own very material advantage. "You can lead a horse to water but you cannot make him drink." We have shown what a field there is, but we do not assume that most dealers are not already more or less aware of it. By bunching the evidence as we have, we believe nevertheless, that we have given the rank and file a broader conception of the possibilities than they ever had before. We are frank to confess that the result of our canvass for this material has been a revelation to ourselves as well. We were, of course, aware of some of the potentialities, but we have been surprised to learn to what an extent all sections of the country are already pushing out into this greater field of usefulness for the commercial car. And yet the ground has only been scratched so far.

Up to a comparatively recent date in the history of the commercial car its range of action has been pretty gener-

ally confined to cities or the larger towns and their suburbs. Paved streets or at least moderately good roads have been, and, in fact, still are, required for satisfactory service, especially from the heavier motor trucks. Muddy or even soft or sandy roads are impossible or impassable (either word will do) for a car with a load that causes it to sink into the road. Thanks to the passenger automobile, country highways have been improved and extended until their network embraces nearly all of the fairly well populated sections. Those directly responsible for road maintenance in the various states and those with any voice in the expenditure of appropriations for roads are so universally motorists themselves by now that the Good Road Movement has gone forward with a vim in the last few years, as a result the distances to which commercial cars can be operated have been vastly extended.

Industries Are Wielding Their Influence

Now the industries, appreciating the value to themselves, are adding their influence that still more and still better maintained roads may be provided. Especially of late they have learned so much about what the railroads cannot do for them, that they have been forced to seek a solution of their transportation problem in another direction and there is no other, where water routes are unavailable (and the extent to which they are is almost negligible) than over the highways.

We are at the end of the first stage and the beginning of the second in commercial car annals. A transition is under way. It will no longer be regarded as an urban means of goods distribution but an interurban and an interstate shipping agency. And as we have remarked before this is not competition with the railroads, but their relief. Heretofore they have had to do what was for them short haul work. There was no way out of it. Now there is, and it means their greater efficiency in the kind of work for which they are best fitted. That they welcome the motor truck's aid is best attested in the fact that they themselves are beginning to adopt it. They have the added advantage of being able to put their gasoline cars on rails as well as on the road and we may expect a big development in this direction soon.

But to get back to the dealer—now is his time to make hay. Whether he is an old hand at the game or a new one, he should read assiduously about what has been and is being done and study the immediate future's possibilities. A good beginning if he has not already made one is to absorb all of the information that is to be had from the grist given in this copy of his COMMERCIAL CAR JOURNAL and the best informed will find a plenty of meaty suggestions as well. If it ever paid any man in any business to hustle, it will pay commercial car and accessory manufacturers, distributors, dealers and salesmen to apply themselves to this golden opportunity. Cripple Creek and the Klondike were mere bagatelles by comparison.

Quick Road Improvement Suggestion

IN connection with the questions of highway transportation and road conditions, here is a suggestion that has been offered to the Highway Transport Committee at Washington, which it thought was feasible:

Owing to the impracticability of building a lot of new, complete highways in a short space of time, concrete tracks could be laid for the use of motor trucks in transport service, under the control of the Highway Transport Committee. These concrete tracks could be built at one side of the road somewhat in the shape of gutters and could have ample foundations to support heavy trucks.

Trucks Must Be Kept Busy

A FIRST principle in the efficient use of commercial cars, as with any piece of machinery, is to minimize their idle time. Important as this is under any conditions, it is especially needful now with a greater demand for them than ever before and an inevitable shortage of sufficient of them. Aside from business reasons, patriotic motives imperatively call for it, because to effectively help the Government in the conduct of the war every element in industrial activity must be performed with the least wastefulness.

The railroads are keyed up to the greatest pitch they have ever known—and that is not enough, as has been so painfully demonstrated. Next to them for transportation service, as everyone agrees, are commercial cars. If they prove wanting there is nothing left to fall back on. That there are not enough for the present emergency goes without saying, and although more are being turned out as fast as possible there will still be too few. To make what are available accomplish the most requires, not more speed when they are in motion, for that spells danger, but less standing still.

Opportunity for Experts on Loading

There is the opportunity for a good many with the right kind of knowledge and ability to be useful by studying loading and unloading problems. Trailers are a great help, as they can be loaded and unloaded while the tractor truck is continuously in operation. For the straight trucks much can be done to reduce their idle time by the provision of auxiliary loading equipment—properly arranged loading platforms with hand trucks or conveyors or chutes, and where the character of load allows, dumping bodies expedite unloading and removable bodies like trailers facilitate both the taking on and discharging of loads.

It is not the purpose, however, here to go into details as to how this part of the work should be handled, but rather to emphasize its intimate relation to efficient commercial car service. Individual cases call for individual treatment and it is the part of experts to determine what shall and what shall not be the procedure in a given instance. The difficulty is that purchasers of trucks are more often than not lacking in facilities or the talent to get them. It is the wise dealer that does not content himself with the sale of a car, but sees to it that it is so employed after it passes into the customer's hands that it proves profitable, for thereby hang the repeat orders.

That, by the way, is one of the big differences between passenger and commercial car selling. A single car for a year at least, is the rule in the former, but a business man will buy more commercial cars as fast as he needs them. It is a mistake to expect that inefficient use of the first will hasten the purchase of another—more likely, it will put that buyer out of the market altogether.

By all means it pays to make the truck pay the owner, and the surest way to accomplish that is to see that he employs proper loading and unloading methods.

How Industry Can Help Conserve Coal

CONSERVATION is the order of the day. We must win the war and conservation of fuel is one of the great and needful savings which must be effected.

The automobile industry can assist in this matter, and fortunately without in any way curtailing production. This can be done by favoring the Daylight Saving Bill, which will come before Congress this session.

Now is the time to act if this Congress is to make the Daylight Saving Plan an actuality. The scheme is simply to set the hands of the clock forward one hour—not in this city, or in that, but as a national war measure for the purpose of using the daylight which we have, thereby conserving fuel consumed unnecessarily for the production of light in factories.

Twelve European countries, including England, France, Germany, Austria-Hungary, Italy, Denmark, Sweden, Holland and Portugal, have already profited by the Daylight Saving Plan.

Not only do we conserve coal by such a measure, but the entire nation will be benefited. Productions will be actually increased by the use of daylight rather than the use of artificial light. It will be not only of benefit as a war measure but will be of benefit to the people and especially to the workmen and craftsmen of all trades.

And Here is the Way You Can Assist

The method by which this must be brought about is to urge your Congressmen and Senators to put through this Daylight Saving Bill at once, during this session, and under no circumstances permit it to be "pigeon-holed." The bill already has the support of President Wilson and Dr. Garfield, the Federal Fuel Administrator. "Do your bit" and have your firm write at once to Washington and influence all those you can to write immediately urging the passage of this most important bill.

War's Effect on Rubber Trade

That there need be no apprehension concerning the condition of the rubber industry and the war's effect upon it, is the opinion of B. G. Work, president of the B. F. Goodrich Co. Mr. Work made this statement in view of the discussions, so rife at the present time, concerning the general unsettlement of conditions as the result of war and the extraordinary difficulty of gauging the future. The rubber industry at present is in good condition, he says. "Indications now are that production of new automobiles will not be curtailed as much as has been anticipated. The steel manufacturers are going to be able to furnish

automobile companies more steel than had been expected, and are going to be able to do it without neglecting the full requirements of the government." Mr. Work pointed out the facts that farmers had money at the present time and would buy automobiles, and that cars already manufactured would need new tires. Another advantage which indirectly influences the rubber industry is the present railroad situation. Automobile factories can deliver cars under their own power and can transport raw materials also. These facts, together with the assurance that the cotton situation is not menacing, all point to a satisfactory condition of affairs in the future.

Developing a Military Truck

The Mexican government officially announces that expert mechanics who have been employed for some months in developing at the national automobile shops a motor machine designed for military uses especially, have succeeded in building a car which, it is claimed, is equal to anything of the kind imported into Mexico, and superior to many patterns. Plans are being made for the production of a considerable number of these machines.

Four Drive Tractor Co., Big Rapids, Mich., will erect an addition to its plant in the near future.

Metal and Rubber Markets

Government Consumes Bulk of Steel Output

The steel market at the close of the year was quiet and without incident. The way has been paved for a heavy rush of business by a stabilizing of trade on the basis of the established prices, which will be continued without further revision until March 31. With the Government in control of the railroads and plans already on foot for the maximum efficiency in the carriage of freight, it is hoped that one difficulty, if not entirely overcome, will be reduced, to help out in the tremendous task of production which confronts the mills, fabricating shops and factories.

Quotations on January 3d were:

Steel Products Prices

Bessemer billets, per ton, mill	\$47 00 a
Open hearth, per ton, mill	44 50 a
Forging billets, per ton, mill	60 00 a
Sheet bars, per ton	51 00 a

SHEETS

The following prices are for 100-bundle lots and over f. o. b. mill:

Blue Annealed Sheets—	
Nos. 3 to 8	\$4 20 a
Nos. 9 to 10	4 25 a
Nos. 11 and 12	4 30 a

No. 17 and lighter gauges are based on \$5 50 a \$7 50 per 100 lb. for No. 28 Bessemer Black sheets.

Box Annealed Sheets, Cold Rolled—	
Nos. 17 to 21	\$4 80 a
Nos. 22 to 24	4 85 a
Nos. 25 and 26	4 90 a

Galvanized Sheets of Black Sheet Gauge—	
Nos. 10 and 11	\$5 25 a
Nos. 12 to 14	5 35 a
Nos. 15 and 16	5 50 a
Nos. 17 to 21	5 65 a
Nos. 22 to 24	5 80 a
Nos. 25 and 26	5 95 a

Tin—Mill Black Plate—	
Nos. 15 and 16	\$4 80 a
Nos. 17 to 21	4 85 a
Nos. 22 to 24	4 90 a
Nos. 25 to 27	4 95 a

IRON AND STEEL AT PITTSBURGH

Bessemer iron	\$37 25 a
Bessemer steel, f.o.b. Pittsb'g	47 50 a
Skelp, grooved steel	2 90 a
Skelp, sheared steel	3 25 a
Ferromanganese (80 per ct.)	250 00 a 275 00
Steel, melting scrap	22 50 a 24 50
Steel bars	2 90 a
Manganese ore, per unit	1 00 a
Wire rods	57 00 a
Iron bars	3 50 a
Plain wire	3 25 a
Plain wire, galvanized	3 95 a 4 65
Cut nails	Nom. 4 00 a 4 65
Wire nails	3 50 a
Barbed wire, galvanized	4 35 a 4 85
do. painted	3 65 a

OLD MATERIALS.—Demand is very quiet, as is usual at this season of the year. The movement into consumption is also hampered by the difficulties of shipment. Within the last few days there has been some improvement, but it is not sufficient. Indications point to a good demand early in 1918.

Old steel rails, long lengths	\$30 00 a 31 00
Old steel rails for rerolling	33 00 a 34 00
Relaying rails	50 00 a 55 00
Old car wheels	28 00 a 29 00

Old iron axles for export	41 00 a 42 00
Old steel axles	41 00 a 42 00
Heavy melting steel scrap	25 50 a 26 00
No. 1 wrought railway scrap	32 00 a 33 00
Wrought yard scrap	27 00 a 28 00
Wrought pipe and tubes	30 00 a 31 00
Heavy cast scrap	28 00 a 29 00
Wrought turnings	15 00 a 16 00
Cast borings, delivered at mills	15 00 a 16 00
Burnt iron, delivered at mill	17 50 a 18 00

Rubber Market Quiet

The new year opened with a very quiet rubber market. The activity in spots in the closing days of 1917, due to short covering, gave place to apathy, neither dealers nor manufacturers showing an inclination to take hold.

Para—Up-river, fine, per lb.	61½ a
Up-river, coarse	41½ a 42
Island, fine	51 a

Island, coarse	28 a
Caucho, ball, upper	41 a 41½
Caucho, ball, lower	38 a
Cameta	28 a
Ceylon—First latex, pale crepe	59½ a
Brown, crepe, thin, clean	49 a
Smoked, ribbed, sheets	59½ a
Centrals—Corinto	38 a 39
Esmeralda	37 a 38
Guayule	26 a 28
Balata, sheets	a 83
Balata, block Ciudad	a 78
Balata, block Panama	54 a
Mexican—Scrap	39 a 40
Frontera	39 a 40
African—Massai red	a

DOMESTIC SCRAP RUBBER

Tires—Automobile	4¾ a 5
Inner tubes, No. 1	20 a
Inner tubes, No. 2	a 10
Bicycles, pneumatic	4¾ a 4½
Red	a 10



Sewel Cushion Wheel Branch Managers Convention Recently Held at the Detroit Factory



Salesmen of Advance Felt & Specialty Manufacturing Company, Who Were Guests at a Luncheon in Chicago, December 28

Activities of the Motor Truck Association of Philadelphia

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COMMERCIAL CAR JOURNAL OFFICIAL ORGAN

Motor Truck Association of Philadelphia Elects Officers

Mr. Perry E. Beam, of Beam-Fletcher Corporation, General L. W. T. Waller and E. J. Cattell Were the Speakers

At the monthly meeting of the Motor Truck Association of Philadelphia, held Wednesday, December 19th, at the Hotel Adelphia, the following officers were elected for 1918: President, John D. Howley, The White Co.; vice president, Edward W. Burnshaw, Jr., Girard Automobile Co.; treasurer, W. Ross Walton, Firestone Tire & Rubber Co.; secretary, W. H. Metcalf, George W. Houk Co.

Board of Governors: The two retaining office for another year are Lee J. Eastman, Packard Motor Car Co. and E. R. Whitney, Commercial Truck Co. The new members elected were O. W. Doolittle, Foss-Hughes Co.; J. Harry Schumacker, J. H. Schumacker & Co., and Thos. K. Quirk, H. Kaiser & Co.

Nominating Committee: A. B. Shore, B. F. Goodrich Co.; D. Walter Harper, Commerce Philadelphia Sales & Service Co.; Thos. K. Quirk, H. Kaiser & Co., chairman.

O. W. Doolittle presided.

Mr. Edward W. Burnshaw, Jr., made an interesting report for the Traffic Committee, explaining that they had received some concessions from the New Jersey State authorities on the operation of the new traffic law in relation to trucks. Important among these was the allowance of the use, until worn out, of the tires with which any truck is now equipped, after which the new regulation sizes will be required.

Gen. Littleton W. T. Waller, of the U. S. Marine Corps, gave an interesting talk on that branch of the service and gave some thrilling experiences of actions in which he had taken part throughout the world.

E. J. Cattell made a patriotic speech, and Lincoln L. Eyre, Esq., who has been stumping throughout the state for the Government to arouse interest in the war, made a stirring speech, reciting some of the horrors perpetrated by the Germans, and appealed to American citizenship to help the Allies win the war.

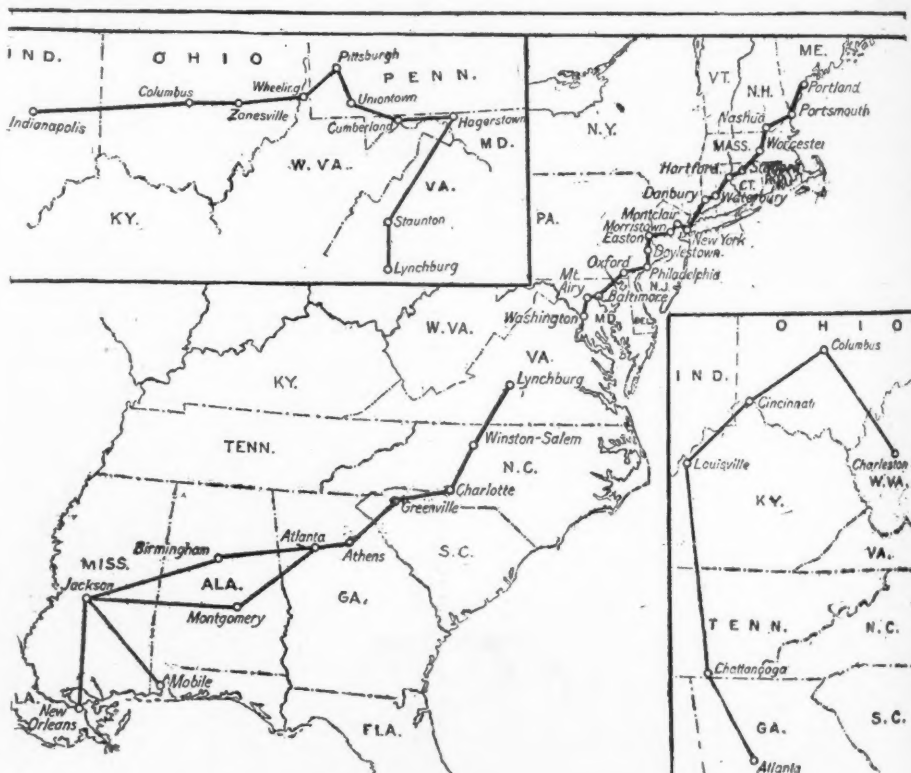
Perry E. Beam, of the Beam-Fletcher Corp., read an interesting paper on the operation of fleets of trucks on long distance hauls for contract construction work and inter-city delivery hauling.

Mr. Beam stated since they had opened their through delivery service between New York and Philadelphia they have been able to maintain their schedule every day, even during the bad weather. Goods are collected in New York and delivered to the address in Philadelphia the next day. He stated the delivery of goods in Philadelphia required more time than the actual hauling of them from New York required. The same truck that brings the goods over delivers them in Philadelphia to the different consignees; this, of course, saves loading and unloading in Philadelphia. They are adding ten more trucks to their New York service, and in addition they do long distance hauling to Atlantic City, Baltimore, Harrisburg, Reading, Allentown, Scranton and Wilkes-Barre, but at the

present time they are not maintaining a regular schedule, except to New York.

Mr. Beam gave some very interesting figures about different contracts he has handled, such as hauling material to mines and hauling ore from the mines to the smelters, and stated that three trucks had taken the place of eleven 12-mule team outfits. Where it took five days for a team of 12 mules to cover the distance, a motor truck covered it in eighteen hours.

CONLEY & HUSSEY, Chicago, Ill., distributor for "Horse Shoe" tires manufactured by the Racine Auto Tire Co., has recently been incorporated for \$75,000, and has taken on two additional stores next the original location at 3445 Michigan Ave.

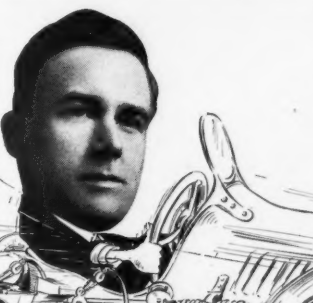


New Motor Parcel-Post Routes Cover Four Thousand Miles

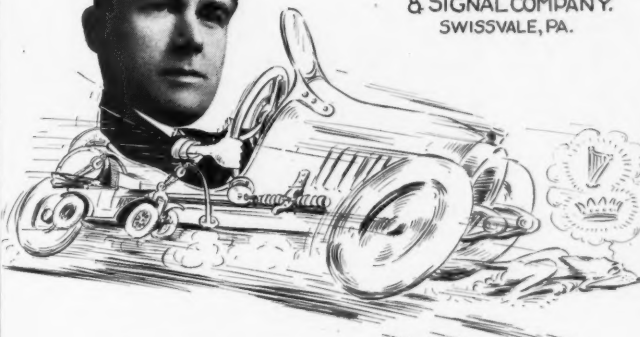
Although the existing law does not provide for the assignment of Government-owned trucks on mail routes, still, the Post-Office Department is making large use of commercial cars for mail and parcel-post delivery and is increasing this every day. Where the mail is carried under contract, a recent law permits the Post-Office Department to designate the sort of vehicle to be employed and in awarding new contracts, the Department is specifying that motor vehicles be employed on all routes where the roads are such as to permit of their use. The above map shows the new route which has been planned and which it is proposed to put into execution within the next two and a half months.

It is understood that a further extension of the use of Government-owned motor vehicles will be put into effect in the Parcel-Post service on rural routes, just as soon as Congress enacts a law which is now pending for that purpose.

CCJ GALLERY of SALES MANAGERS

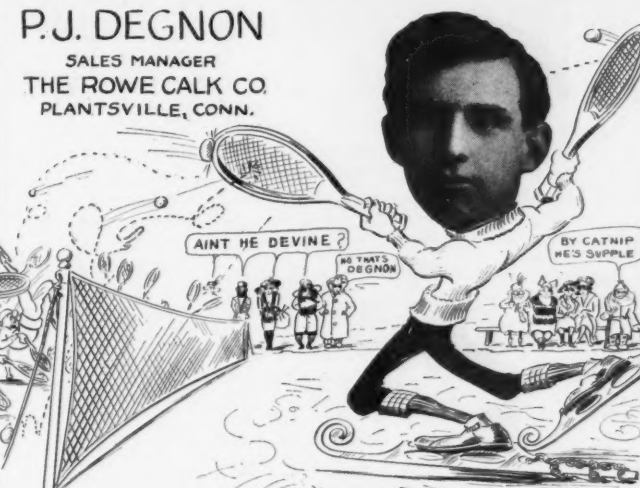



F.L. WALTON
SALES MANAGER
THE UNION SWITCH
& SIGNAL COMPANY.
SWISSVALE, PA.




BE IT PLEASURE OR BUSINESS—
HIS PASTIME IS MAKING FAST TIME.

P.J. DEGNON
SALES MANAGER
THE ROWE CALK CO.
PLANTSVILLE, CONN.

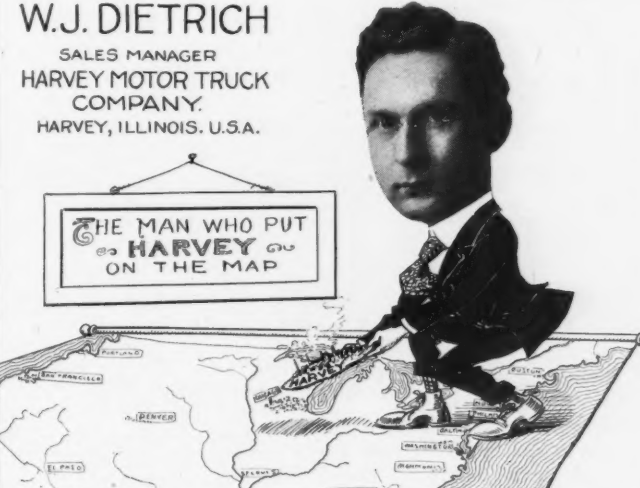



A.A. MACCOOL
SALES MANAGER
GUARANTY MOTORS CO.
CAMBRIDGE, MASS.




IN 1927

W.J. DIETRICH
SALES MANAGER
HARVEY MOTOR TRUCK
COMPANY.
HARVEY, ILLINOIS. U.S.A.

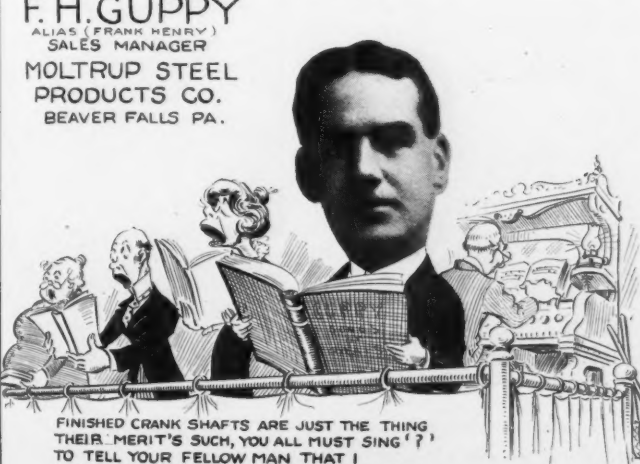


J.E. OWENS
SALES MANAGER
THE BUNTING BRASS
& BRONZE COMPANY
TOLEDO, OHIO.



THEY SAY A GOOD SALESMAN MUST BE A GOOD FIGHTER SO
THAT'S WHY SALESMANGERS GO WHERE THEY CAN GET INSPIRATION

F.H. GUPPY
ALIAS (FRANK HENRY)
SALES MANAGER
MOLTRUP STEEL
PRODUCTS CO.
BEAVER FALLS PA.



FINISHED CRANK SHAFTS ARE JUST THE THING
THEIR MERIT'S SUCH, YOU ALL MUST SING?
TO TELL YOUR FELLOW MAN THAT I
HAVE JUST THE KIND THEY OUGHT TO BUY
ALRIGHT BROTHER AMEN.

**Allen C. Chambers**

Who has assumed the duties of assistant sales manager for the Russel Motor Axle Company, Detroit, was formerly connected with the advertising department of the Chilton Company.

**H. A. Conlon**

In the December issue of the "Commercial Car Journal," page 17, we inadvertently stated that Mr. Conlon was the vice president and sales director of the Acason Motor Truck Company. It is true that Mr. Conlon has joined the sales force of the Acason Motor Truck Company, but he is not the vice president and sales director, but is assistant to Mr. John F. Bowman, who holds that position.

**Wm. A. Carrell**

Who has been appointed chief engineer and works-manager of the Erd Motor Company, Saginaw, Mich. Mr. Carrell will also direct the sales and advertising of the company.

Personal Items

Jotham Allen has been elected president of the Four Drive Tractor Co., Big Rapids, Mich. The other officers of the company are J. C. Jenkins, vice-president and sales manager, and Albin Johnson, secretary and treasurer.

Thomas Zimmerman, recently of the United States Light & Heat Corp., Niagara Falls, N. Y., has joined the engineering department of the Standard Parts Co., Cleveland, O., and will have charge of engineering in connection with axles.

C. W. Hellen, for five years president and general manager of the Dart Motor Truck Co., Waterloo, Ia., has disposed of his interests in that concern and will retire from the business.

H. H. Henry, formerly with the Maxfer Truck Co., is the new president and general manager of the Dart Motor Truck Co., Waterloo, Ia.

Melvin F. Doty has recently been appointed production manager of the Michigan Steel Casting Co., Detroit, Mich.

E. F. Lepine has been made assistant director of purchases for the Continental Motors Corp., Detroit, Mich. He was formerly connected with the Chalmers Motor Co.

George H. Kleinert has been appointed mechanical supervisor of the Standard Parts Co.'s plant at Cleveland, O. He was formerly in the production department of the Studebaker Co.

C. W. Butterfield has recently been appointed sales engineer of the Dyneto Electric Corp., Syracuse, N. Y.

Arthur H. Cummings has been made advertising manager of the Timken Roller Bearing Co., Canton, O. He was formerly assistant advertising manager of the B. F. Goodrich Co., Akron, O.

E. N. Broderick has been appointed special representative by the Burd High Compression Ring Co., Rockford, Ill.

T. Donnellan, manager of the Bangor, Me., branch of the B. F. Goodrich Rubber Co., Akron, O., has joined the United States Army.

Charles C. Goodrich, director of the B. F. Goodrich Rubber Co., Akron, O., has received a commission in the Ordnance Department of the United States Army.

George P. Sweet, general manager of the United Motors Co., Grand Rapids, Mich., has been commissioned a captain in the Signal Corps of the aviation department of the army.

Fred Wellman, former advertising manager of the Olds Motor Works, has joined the advertising department of the Moline Plow Co., Moline, Ill.

R. A. Palmer, former head of the Pontiac Chassis Co., is now in charge of production for the Collier Motor Truck Co., Bellevue, O.

Walter Bamford, until recently connected with the Detroit Motor Car Co., has become production manager of the Fulton Motor Truck Co., Farmingdale, L. I.

Walter F. Sheehan has resigned the position of general manager of the Globe Motor Truck Co., E. St. Louis, Ill. He has not formed any connection for the future.

Julius Andrae, president and founder of Julius Andrae & Sons Co., Milwaukee, Wis., died recently at his home in Milwaukee.

Benn M. Corwin has been appointed referee in bankruptcy for the Service Auto Wheel Co., Grand Rapids, Mich.

Charles T. Main, of Boston, Mass., has been elected president of the American Society of Mechanical Engineers. Mr. Main has practiced as a consulting engineer for a number of years, and has designed and supervised the construction of numerous industrial steam-power and water-power plants.

H. Lauterbach has resigned from the presidency and general managership of the Rogers Bros. Co., Inc., New York City, distributor of Rogers trailers.

**Frank M. Hecox**

Secretary-treasurer of the Towar-Ayers Company, Detroit, Mich., distributor of Denby trucks.

**John B. Hance**

Sales manager of the Towar-Ayers Company, Detroit, Mich., distributor of Denby trucks.

**W. E. Palmer**

Who has been elected treasurer of the Goodyear Tire & Rubber Company, Akron, Ohio.

**H. S. Yates**

Who has been appointed to the branch managership in Toledo, by the International Harvester Company, Chicago, Ill.

Boston Show Plans Completed

Boston's Sixteenth Annual Automobile Show will open in Mechanics Building and Horticultural Hall on March 2d, and continue through March 9th. In addition, the Salon will be held at the Copley Plaza Hotel.

This year's exhibition of automobiles, motor trucks and accessories will be larger than that of last year. In spite of the engaging of the entire Mechanics Building, with 110,000 sq. ft. of floor space, and Horticultural Hall, a few doors beyond, with more than 15,000 sq. ft. of floor space, the list of applications for display room at the show far surpasses the accommodations obtainable. Thus, this year's Salon may be an important addition to Automobile Week. Boston lays claim to having the nation's largest retail show with the largest number of exhibitors of any automobile show in the country, not excepting New York or Chicago.

The motor truck exhibits this year will be larger than ever before, owing to the greatly increased business in New England during the past season in this branch of the industry. Not only will more manufacturers exhibit their products, but a wider variety of truck bodies, motors, etc., will be made. The truck exhibits will not be housed separately from the automobiles, but will be shown in both Mechanics Hall and Horticultural Hall.

Both the Mechanics Hall and Horticultural Hall exhibitions will be under the direction of Chester I. Campbell, who has managed the shows of past seasons with marked success. There will be, in reality, one show, and stub-tickets with one section for admission to Mechanics Building and the other to Horticultural Hall will be issued. This year there will be no "society night" with the customary additional admission. The Salon will be conducted independent of the regular show.

Manager Campbell, President J. H. MacAlman, of the Boston Automobile Dealers' Association, and President J. S. Hathaway,

of the Commercial Motor Vehicle Association, under whose auspices the show is held, all report far greater interest in the approaching Boston Show than in that of any former year.

Last year's attendance at the Boston Automobile Show averaged 35,000 daily.

The Boston Automobile Dealers' Association is officered as follows: president, J. H. MacAlman; vice president, J. S. Hathaway; treasurer, F. A. Hinchcliffe; secretary, Chester I. Campbell; directors, J. W. Bowman, C. E. Fay, J. H. Johnson, J. W. Maguire, C. P. Rockwell, F. E. Wing and the officers.

The officers of the Boston Commercial Motor Vehicle Association are: president, J. S. Hathaway; vice president, J. W. Maguire; treasurer, E. Day Baker; secretary, Chester I. Campbell; directors, P. S. Aultman, L. B. Sanders, J. L. McKone, N. H. Halliday, C. P. Rockwell, J. H. MacAlman and the officers.

Champion Spark Plug Company Holds Convention

Sixty members of the sales force of the Champion Spark Plug Co., of Toledo, O., met December 17-22 for the semi-annual sales convention at the Toledo offices of the company. There were present also a number of jobbing representatives from Canada, together with men of prominence in advertising and motor circles. The program for the convention week included class meeting sessions, round table discussions, get-together meetings, an indoor athletic meet, a trip to Detroit and various social functions.

Portage Rubber Co., Akron, O., has increased its capital stock from \$3,000,000 to \$10,000,000; of this amount \$2,500,000 will be issued in common stock and the balance of \$4,500,000 in preferred shares.

Varnish Corporation Formed

An important business transaction was concluded recently, when the Glidden Varnish Co., Cleveland, O., and its subsidiary, the Glidden Varnish Co., Ltd., Toronto, Canada, were purchased outright by a newly formed corporation headed by Adrian D. Joyce. The new company will be known as the Glidden Co., and will be capitalized at \$2,500,000, fully paid in.

Mr. Joyce was until recently director and general manager of sales and distribution for the Sherwin-Williams Co. Associated with him in the new company are O. A. Hasse, formerly manager of paint and varnish sales for Sherwin-Williams Co., and R. H. Horsburgh, who was controller of the same company. They will occupy the positions of vice-president and secretary-treasurer, respectively, in the new corporation. Members of the Glidden family, including F. A. Glidden, heretofore president of the company, will retire from the new corporation, but the balance of the organization will remain intact. The new corporation will not be affiliated with any other paint and varnish interests.

Plans for the broadening of the new concern are already under way, and include the addition of complete new lines of paints, varnishes, enamels and stains. It is the intention of the company to devote special attention to the manufacture of paints, which have heretofore been a subordinate product of the company. The entire line of paint and varnish products will be grouped and advertised under the name "Glidden."

The present Glidden plant occupies over 16 acres, and its equipment is modern in every respect. Glidden paints and varnishes are extensively used by the automobile trade, and the company has large Government contracts to be executed during the coming year.

New Agencies

Nickerson & Schroeder, Brooklyn, N. Y., has taken the distributing agency for Dart trucks, made by the Dart Motor Truck Co., Waterloo, Ia., for Brooklyn and Long Island.

Eldredge-Buick Co., Spokane, Wash., has been appointed distributor of the Sampson tractor in the States of Washington and Oregon and the provinces of Alberta, British Columbia and Saskatchewan. The Sampson tractor is manufactured by General Motors Co., Pontiac, Mich.

Empire Motor Sales Co., Mason City, Ia., will handle sales of Dart trucks for the Dart Motor Truck Co., Waterloo, Ia., in five counties in northern Ia.

W. C. Norris Sales Co., Tulsa, Okla., has taken the distributing agency for Gary Motor Truck Co., Gary, Ind., for the State of Oklahoma.

Towar-Ayers Co., Detroit, Mich., announces that hereafter it will handle Denby trucks exclusively. Denby trucks are manufactured by the Denby Motor Truck Co. of Detroit.

H. J. Koehler Motors Corp., Newark, N. J., has recently appointed the following dealers

for its motor trucks: R. & C. Auto Co., Massena, Ia.; Northrup Motor & Machine Co., Syracuse, Kan.; N. J. Dinnen Co., Ltd., Winnipeg, Can.; C. F. Briggs Co., 373 Central Ave., Newark, N. J.; Geo. G. Hamilton Motor Truck Co., Kansas City, Mo.; Lone Star Motor Co., El Paso, Tex.

Southern United States Truck Sales Co. has been organized at Memphis, Tenn., to distribute United States motor trucks.

Halpenny Auto Co., Des Moines, Ia., has secured the agency for Selden trucks in territory covering a large part of Iowa.

Buchholz & Francois will distribute International motor trucks in Dubuque, Ia., and surrounding territory.

Overton Truck Sales Co., distributor of Overton 1½-ton semi-trucks, in Connecticut, New Jersey and New York, has opened showrooms at 1700 Broadway, New York City.

Eastman & Gale, Indianapolis, Ind., will distribute the Vim truck in Indiana, with headquarters on N. Meridian St.

O'Donnell-Smith Auto Sales Co., with headquarters at 965 Cherry St., S. E., Grand Rapids, Mich., has been organized to handle Panhard trucks, manufactured by the Hamilton Motors Co., Grand Haven, Mich.

Topeka Buick Co., Topeka, Kan., will handle G. M. C. trucks in Topeka and vicinity.

Removals and Trade Changes

Columbian Bronze Corp., Freeport, L. I., N. Y., announces the removal of its general offices to 50 Church St., New York, N. Y.

Super Spark Co., Detroit, Mich., announces its removal to its new home at 756 Woodward Ave.

Davis Mfg. Co., Milwaukee, Wis., has been taken over by the Avery Co., Peoria, Ill. The Davis Mfg. Co. has for some years been manufacturing the engines for Avery tractors.

Robinson Metal Co., Philadelphia, Pa., announces its removal from 926-30 Callowhill St. to larger quarters at 1017 Callowhill St.

Art Metal Mfg. Co., Chicago, Ill., has succeeded the Art Metal Craft Co. The company has recently been reorganized and will do an extensive business in tubing for automobiles and motor trucks.

Geo. W. Nock Co., Inc., Philadelphia, Pa., announces the removal of its salesrooms to 1304-06 Race St.

Scott & Holladay, Ltd., New York, N. Y., are removing to larger premises in the Empire Bldg., 71 Broadway.

Premier Metal Etching Co., Long Island City, N. Y., is removing to larger quarters at 14th St. and Van Alst Ave.

Manly Motor Corporation Changes Name

With the reorganization of the Manly Motor Corporation of Waukegan, Wis., greater production as well as an increase in its facilities and a broadening of its line will be made possible. This company will be known in the future as the O'Connell-Manly Truck Co., William L. O'Connell, former Chicago Commissioner of Public Works and Treasurer of Cook County, having joined the firm. He will be treasurer of the company, and Edwin Page, former treasurer, will be vice-president. E. J. Manly remains president, and H. P. Manly, secretary.

Thirty thousand square feet of floor space have been added to the 70,000 already occupied by the company, and supplies of materials and parts are on hand to keep the factory running until spring without replenishing.

Changes in the production schedule will include the building of a 1-ton truck to sell for less than \$1400. This model will have a 3½ x 5-in. engine with Dyneto starting and lighting and Delco ignition. Pneumatic tires will be fitted to the front wheels, and, unlike the other Manly trucks, this model will operate on gasoline only. Production plans call for 600 to 750 of these trucks for 1918. The 2- and 2½-ton models will be continued, but the 3-ton model has been discontinued and a 3½-ton model substituted. Three sizes of tractors, of the semi-trailer type, will be built. A 3-ton model will operate on gasoline only and the 5- and 7-ton models will use either kerosene or gasoline. The trailer, which is to be manufactured in the Manly plant complete, will have a shorter wheel-base and heavier frame and springs.

Hudson-Peck Machine Products Company Formed

To take care of the manufacture of the various automobile specialties of the Hudson Motor Specialties Co., Wm. S. Hudson has acquired an interest in what was the Peck Machine & Ordnance Co., of Philadelphia, formerly located at 11 N. 21st St. The machinery, equipment, tools, contracts and entire business of the company have been taken over by the new organization, known as the Hudson-Peck Machine Products Co., and the new plant is located at 1926 Arch St. Wm. S. Hudson is president; F. G. Peck, vice-president and factory manager; Raymond Hawley, general manager, and Minor Harvey, chief engineer of the Keystone Hindley Gear Co., will be associated with the company in an advisory capacity.

Truck a Profitable Addition

The Cole Motor Car Co., of Buffalo, which for several years has handled the Cole and Maxwell passenger cars, recently took on the Maxwell 1-ton truck. No change in salesroom equipment was necessary, said H. D. Elliott, manager, the other day, but a selling organization to handle the truck was established.

Mr. Elliott and his staff advocate the use of pneumatic tires on the front wheels, to lessen the jar on the engine, and solid

tires on the rear wheels. Mr. Elliott declares that chains must be used on the rear wheels when the streets are slippery, no matter what kind of tires are used, and that because of the greater traction on pneumatic tires than on solid, the wear on the pneumatic is greater. This item of cost makes the solid tires advisable for rear wheels, he declares.

Rajah Plug Sales Now Handled by Edw. A. Cassidy

The Edward A. Cassidy Co., of New York City, is now marketing the Rajah Spark Plug, made by the Rajah Auto Supply Co., of Bloomfield, N. J. The Rajah Sales Dept. has been placed in Cassidy control, and Gregory Flynn, who formerly handled the Rajah sales, occupies a position with the Cassidy Co., and will specialize in the sale of Rajah plugs and terminals.

Scarcity of Horses in Texas

There is a general scarcity of horses and mules in Texas due to the war. This scarcity is expected to become greater when the government makes the next purchase of horses and mules, according to W. C. Barrickman, secretary of the Texas Industrial Congress. "This means," said Mr. Barrickman, "that Texas is going to demand more tractors and more automobile trucks. In fact the day of horse-drawn plows and horse-drawn vehicles in getting to market is gradually passing. Farmers realize that they can do in one hour with a tractor what they can do in a day with a team of mules or horses. They can go to market in about one sixth of the time with an automobile or truck. I am expecting to see more tractors sold in Texas next year than all combined heretofore. I believe the same of the automobile trucks."

The Government, Mr. Barrickman said, is going to buy approximately 220,000 head of horses. Many of these he declared must be bought in Texas and the Southwest.

Texas to Have State Automobile Association

Representatives from all the automobile clubs of the state of Texas are expected in Dallas on January 15th at which time the clubs will form a State Automobile Association. The object will be the working out of some plan to prevent automobile thefts, agitation for better highways in the state and adoption of measures in opposition to any unjust legislation. The meeting is called by C. H. Verschoyle, chairman of a committee recently appointed by the Dallas Automobile Club.

Commercial Car Changes Announced Price Increases

Hamilton Motors Co., Grand Haven, Mich.	
Panhard A, 1-ton.....	\$895
Panhard B, 1½-ton.....	1095

R. E. Fulton—This Month's "Leader of the Industry"

(See page 19)

When a man tells you quite plainly that he hasn't anything particular to say, it follows as a matter of course that he is a man who prefers to do.

R. E. Fulton, vice-president and general sales manager of the International Motor Co., New York City, is an instance. He has had a unique trade experience dating from the year 1902 when he joined the Pope Mfg. Co. From that year to 1905 he acted as New York branch manager for the company. His next undertaking was the handling of the world famous Mercedes, which he did with marked success for half a dozen years.

The Mercedes connection involved the maintenance of offices in London and Paris, and thus Mr. Fulton's interests may be said to have been "International" then as well as now.

Owing to the Mercedes position in the world of racing, Mr. Fulton had many dealings with the speed merchants of the day. He has sold cars to the Vanderbilts, to Foxhall Keene and many others and he purchased and owned the famous car which Janetzy drove to victory in the Irish Gordon Bennett Race of 1903.

In 1911 Mr. Fulton became New York branch manager of the International Motor Co., and since has risen to the position he now holds, that of vice-president and general sales manager. Being a man of deeds, not words, he is reluctant to talk about himself and hence this very brief sketch of an interesting and successful career.

Detroit Automobile Club Elects Officers

The Detroit Automobile Club, affiliated with the American Automobile Association, which has just completed its first year, recently elected officers for 1918. William E. Metzger was re-elected president by the directors. Edward N. Hines, chairman of the Wayne County Road Commission, was made first vice-president; G. Edward Bleil, second vice-president; Thomas P. Henry, third vice-president; W. B. Bachman, secretary, and J. Lee Barrett, treasurer.

In addition to the officers, the following are directors: Eugene W. Lewis, vice-president, Timken Axle Co.; Alfred O. Dunk, president, Puritan Machine Co.; W. K. Brush, automotive consulting engineer; Col. Sidney D. Waldon, Aircraft Production Board; W. D. Rockwell, in Government service at Washington; W. G. Bryant, attorney; Robert K. Davis, Detroit Reduction Co.; M. C. DeWitt, Jeffrey-DeWitt Co., and Harry B. Parker, real estate broker.

Captain W. S. Gilbreath, who has been manager for the past year, continues in that capacity.

Leaders in the Commercial Car Industry



R. E. Fulton
Vice President and General Sales Manager International Motor Company

(See page 18a)

"I read the 'Commercial Car Journal' and have done so for years, because it contains valuable information and constructive ideas and reaches a large number of desirable agents."

R. E. Fulton

Post-Office Department Adopting the Motor Truck for Parcel-Post Service

MOTOR truck parcel post routes aggregating between three thousand and four thousand miles will be in operation in various parts of the country probably within the next three months. One chain of motor routes will extend from Portland, Me., to New Orleans. Another will cover much of a large stretch of territory in Ohio, Indiana, Illinois and West Virginia. On the Pacific coast routes will be established between San Francisco and Sacramento, Cal., via Stockton and Fruitdale, a distance of 125 miles, and between Redlands and Los Angeles, Cal., via Ontario and Pomona, Cal., a distance of 76 miles.

It is the belief of the Post Office Department that the operation of these routes, and others to be established, will materially aid in the distribution and in lowering the cost of food products.

The existing law does not provide for the employment of Government-owned motor trucks on rural delivery routes, nor does it require the rural carriers to use motor vehicles.

In the star route service, however, where the mail is carried under contract, a recent law permits the Post Office Department to designate the sort of vehicles to be employed, and in awarding new contracts the Department will specify that motor trucks shall be employed on all routes where the roads are such as to admit of their use. These contracts are advertised for bidders, and where payment asked for the service is deemed to be excessive the Department is authorized to provide Government-owned motor trucks and to employ drivers for the operation of these routes.

Government-Owned Trucks Probable

A further extension of the employment of Government-owned motor vehicles by its adoption for the parcel post service of the rural routes will be made whenever Congress enacts a law now pending for that purpose.

Operating under the law as it now stands as applied to the star route service, motor truck routes, some under contract and some operated with Government-owned motor trucks, are in process of establishment from:

New York City to Port Jervis, N. Y., via Belleville, Montclair and Dover, N. J., a distance each way of 86 miles; New York City to Hammonton, N. Y., via Mount Olive, Bordentown, Trenton, Princeton and Elizabeth, N. J., a distance each way of 114 miles; New York City to Easton, Pa., via Montclair, Morristown and Somerville, N. J., a distance each way of 94 miles; New York City to New Milford, Conn., via Pawling, Yorktown Heights, Briar Cliff and Yonkers, N. Y., a distance each way of 91 miles; New York City to Hartford, Conn., via Whiteplains, N. Y., Danbury and Waterbury, Conn., a distance each

way of 105 miles; New York City to Port Jervis, N. Y., via Goshen and Suffern, N. Y., a distance each way of 84 miles; and from

Philadelphia, Pa., to Easton, Pa., via Hallowell and Doylestown, Pa., a distance each way of 56 miles; Easton to Reading, Pa., via Bethlehem and Allentown, Pa., a distance each way of 51 miles; Pottsville, Pa., to Easton, Pa., via Orwigsburg and Danielsville, Pa.; Harrisburg, Pa., to Reading, Pa., via Lebanon and Robeson, Pa., a distance each way of 51 miles, and Harrisburg, Pa., to Hagerstown, Md.

Many Long-Distance Routes Planned

Routes extend from Cincinnati to Springfield, O., via Dayton and Miamisburg, a distance each way of 76 miles; Portland, Me., to Nashua, N. H., via Portsmouth and Exeter, N. H., a distance each way of 105 miles; Nashua, N. H., to Hartford, Conn., via Stafford Springs, Conn., and Worcester and East Pepperell, Mass., a distance each way of 127 miles; Hagerstown Md., to Staunton, Va.; Staunton, Va., to Roanoke, Va.; Winston-Salem to Charlotte, N. C.; Concord to Statesville, N. C.; Charlotte to Camden, N. C.; Camden, N. C., to Columbia, S. C.; Florence to Columbia, S. C., via Darlington and Lydia; Columbia, S. C., to Chapin and Lexington, a distance of 70 miles and return; Charleston, S. C., to Columbia, S. C., via Somerville and Orangeburg, S. C., a distance each way of 126 miles; Orangeburg, S. C. to Augusta, Ga., via Langley and Wiliston, S. C., a distance each way of 77 miles; Savannah to Statesboro, Ga., via Pooler, Bloomingdale, Marlow and Brooklet, a distance each way of 55 miles; Augusta to Macon, Ga.; Macon to Columbus, Ga.; Columbus to Montgomery, Ala.; Greenville, S. C., to Atlanta, Ga.; Atlanta, Ga., to Montgomery, Ala., and Birmingham to Montgomery, Ala., via Verbena and Marbury, Ala., a distance each way of 106 miles.

With the exception of a branch between Washington, D. C., and Richmond, Va., the course of which has not yet been decided on, a chain of routes has been adopted linking Portland, Me., with Nashua, N. H.; Nashua with Worcester, Mass.; Worcester with Hartford, Conn.; Hartford with New York City; New York City with Easton, Pa.; Easton with Philadelphia; Philadelphia with Oxford, Pa.; Oxford with Baltimore, Md.; Baltimore with Washington, D. C.; Lynchburg, Va., with Winston-Salem, N. C.; Winston-Salem with Charlotte, N. C.; Charlotte with Greenville, S. C.; Greenville with Atlanta, Ga.; Atlanta, Ga., with Birmingham or Montgomery, Ala.; Birmingham or Montgomery with Jackson, Miss. Routes will be established Jackson to New Orleans, La., and Jackson to Mobile.

These routes are now surveyed and are being advertised for bids. Where satisfactory bids are not received Government-owned trucks will be used.

The routes already in operation with Government-owned trucks are from Washington, D. C., to Leonardstown, Md., a distance each way of 54 miles; from Annapolis, Md., to Solomons, Md., a distance each way of 65 miles; from Washington, D. C., to Baltimore, Md., via Ridgeville; from Baltimore to Philadelphia, Pa., via Belair, Md., Oxford and West Chester, Pa., a distance each way of 110 miles, and from Baltimore to Gettysburg, Pa., via Westminster, a distance each way of 53 miles.

Routes in the middle states will form a chain from Indianapolis, Ind., to Columbus, O.; Columbus to Zanesville, O.; Zanesville to Wheeling, W. Va.; Wheeling to Pittsburgh, Pa.; Pittsburgh to Uniontown, Pa.; Uniontown to Cumberland, Md.; Cumberland to Hagerstown, Md.; Hagerstown to Staunton, Va.; Staunton to Lynchburg, Va.

Further extensions contemplated but not yet surveyed are from Charleston, W. Va., to Columbus, O.; Columbus to Cincinnati, O.; Cincinnati, O., to Louisville, Ky.; Louisville to Chattanooga, Tenn., and Chattanooga to Atlanta, Ga.

Steel and Copper Prices and Production

Indications are, following conferences just held at Washington, between representatives of the steel and copper industries, on the one hand, and the War Industries Board and Federal Trade Commission on the other, touching prices effective after January 1, that agreement on such prices will be reached with little trouble. Barring a shortage of coal to the steel mills, the production of steel promises to be all the Government could ask. Therefore, the question of revised prices will depend largely upon agreement between the Government and producers as to costs of production. As to copper production, the practical elimination of labor troubles has cleared the way for great production, which is now reported satisfactory. The new year promises to see greatly increased production both of steel and copper.

WAGNER AXLE Co., Anderson, Ind., has been awarded a contract by the Government for the manufacture of axles for the new Liberty trucks. The factory of the DeTamble Motors Co. was recently acquired by this concern and it is planned to increase the floor space of the plant from 80,000 to 280,000 sq. ft.

Who's Who in Washington War Work

Organization of Government Committees With Which the Automotive Industry is Concerned

Automobile Industries Committee

509 Seventh Street, Washington, D. C.

A. W. Copland, chairman. Mr. Copland deals with matters connected with the supply of parts and equipment.

Hugh Chalmers. Mr. Chalmers represents the complete vehicle builders.

John R. Lee. Mr. Lee has been delegated by Henry Ford to look after the Ford company's interests in relation to the supply of war material, etc.

W. D. Rockwell is manager of the committee and any inquiry relating to the supply of raw material or factory capacity for undertaking government work should be addressed to him.

This committee is really the connecting link between the War Industries Board and the Automobile Trade and its position is such that it is in the closest possible touch with existing conditions from day to day. Any car or parts manufacturer needing information regarding government orders, etc., should communicate with Mr. Rockwell.

Highway Transport Committee

Munsey Bldg., Washington, D. C.

Roy D. Chapin, chairman.

Geo. H. Pride.

H. G. Shirley.

A. C. Hargreaves, secretary.

The primary duties of this committee are to facilitate the transport of Government war trucks from the factory to the coast by road and under their own power. These trucks are loaded with Government supplies and operated by men who thus gain experience in road transport which will be of immense value "somewhere in France" later on.

Part of the program includes the keeping of main roads in good condition irrespective of weather conditions and the full co-operation of the various State highway engineers has been requested and is being enthusiastically taken up by these officials.

It is probable that when opportunity offers this committee will take up the matter of road transport of goods from city to city, using trucks suited to the capacity of the individual load.

Inquiries on the subject of road transport or information as to local main road conditions likely to be of interest to the Government should be addressed to Mr. Hargreaves.

The Commercial Economy Board

18th and D Sts., Washington, D. C.

A. W. Shaw, chairman, is dealing personally with the various problems of eliminating waste in all branches of trade and manufacture. From an automobile point of view he is investigating waste in garages, repair shops, service stations, etc., and he is also interested in truck delivery problems and in the transfer of men from the (so-called) non-essential to essential services. Dealers who have ideas in connection with war-saving methods which can be carried out without interference with present efficiency should write Mr. Shaw.

The Aircraft Board

Munsey Bldg., Washington, D. C.

Howard E. Coffin, chairman, should be communicated with in the first instance in regard to any matter appertaining to airplanes, etc. There are many departments dealing with materials, supplies, etc., located at the Signal Corps Aviation Section office at 119 D St.

officers of large experience, so that it may constitute the main reliance of the Department for the large planning and initiative necessary to make our support of the armies in the field most effective and helpful.

Upon the return of Gen. Bliss from Europe, he will bring to the Council fresh knowledge of the conditions as they affect all branches of the service. From time to time members of the Council will be directed to spend in the theatre of war the time necessary to make general observations and special studies for the information of the Council, to the end that there may be constantly present with the Council officers of distinction and ability who have had opportunity for personal observation in the field. All details as to the Council are at the pleasure of the Secretary of War. While any officer is detailed to the Council, provision will be made to free him from administration duties and responsibilities.

The War Industries Board

18th and D Sts., Washington, D. C.

Frank A. Scott, chairman.

Rear Admiral Frank A. Fletcher.

Hugh Frayne.

Colonel Palmer E. Pierce.

Bernard M. Baruch, raw materials.

Robert S. Brookings, finished products.

Robert S. Lovett, priorities.

H. P. Bingham, secretary.

This board is a sort of clearing house for the various committees which are in close touch themselves with manufacturers of all kinds of war material. It does not deal directly with the automobile industry, but acts through the Automobile Industries Committee. It is understood that Dr. Lovett, who issues the priority orders covering the transportation of coal, steel, munitions and goods, will in future co-operate more closely with the automobile industry through H. L. Horning of the War Board. Mr. Horning deals with problems connected with passenger cars, trucks and tractors.

The Council of National Defense

Washington, D. C.

The Secretary of War, chairman.

The Secretary of the Navy.

The Secretary of the Interior.

The Secretary of Agriculture.

The Secretary of Commerce.

The Secretary of Labor.

All boards and committees are in touch with the Council through the War Industries Board. Meetings between the various trade organizations are of daily or even hourly occurrence and the Council of National Defense is the final court of appeal in the event of ideas conflicting.

Newly Created War Council

Plans which have been under consideration for some weeks have been consummated in a general order issued by the Secretary of War creating a War Council within the War Department. At the outset the Council consists of the Secretary of War, the Assistant Secretary of War, the Chief of Staff, Major Gen. Henry G. Sharpe, Major Gen. Erasmus M. Weaver, Major Gen. William Crozier, Major Gen. Enoch H. Crowder. The purpose of the Council is to oversee and co-ordinate all matters of supply of our field armies and the military relations between the armies in the field and the War Department. The Council will act through the Chief of Staff and will be provided with suitable accommodations and facilities for the transaction of its business.

The work of the War Council is of the highest importance and there will be added to the Council from time to time general

The War Council does not take over the specialized duties of the General Staff or the War College, but is intended to bring to the larger problems of the Department both the experience and general training of the officers of most mature years and largest experience in the service.

Old Reliable Motor Truck Co., Chicago, Ill., expects to complete its new plant at Long Island City, N. Y., by February 1, 1918. The factory is being built for the assembly of Old Reliable worm-and chain-driven trucks to be sold in New York City and immediate vicinity and for export shipment. The building will be two stories high and the floors will be of steel, and so designed as to permit of the addition of two more floors at a later date. The plant will have a floor space of 50,000 sq. ft.

Truck Owners' Third Conference

Recent Detroit Meeting So Successful Another is to be
Held March 8th and 9th in New York City

HAROLD P. GOULD, chairman of the Truck Owners' Conference, Inc., Chicago, Ill., announces that the third and most important truck owners' conference will be held March 8 and 9 at the Hotel Astor, New York City. All present or prospective users of trucks are invited to attend and participate in the discussion.

It is anticipated from the success of the recent conference in Detroit, that this meeting will be attended by truck operators from all parts of the country and that much helpful information will be brought out, as it was at the two preceding conferences.

The effort will be made to have topics handled so as to cover primarily principles of operation and maintenance in a way that will be quite as applicable to one business as another.

At the Detroit meeting in the addresses of Irving A. Berudt, of Chicago, and of J. A. Hauley, of Detroit, the principles of quicker loading through planning the work ahead, better mechanical facilities, bonus plans to the loading gang and careful inspection were clearly explained so that others might see how to quicken shipments and reduce cost.

Bonus Plans Increase Efficiency

Handling drivers to secure greater results with less controversy was one of the main points discussed. Most emphasis was laid upon gaining the drivers' good will by allowing them to share in the profits resulting from their handling more tonnage at a lower cost. Six different bonus plans were discussed, the most important one being that used by the Timken-Detroit Axle Co., which George W. Veale showed to be simply a plan for dividing equally between the company and the men the saving in cost under a certain sum per ton mile. This plan, after a year's operation, has actually resulted in large bonuses to the men as well as a substantial total saving to the company. One truck caused an increase of 99.9 per cent. in ton miles hauled, with a reduction in cost of 64.7 per cent.

Maintenance of the truck fleet came in for an important share in the discussion, inasmuch as rising cost of labor and materials, coupled with the necessity of using inexperienced drivers, aggravates this problem. Edward E. LaShum, of the American Express Co., New York City, explained how, by careful inspection and the "maintain-as-they-go" policy, his company has reduced its "lay-up" time to twelve days in two years, while many concerns represented admitted five times that amount as their average.

Most of these same subjects will receive attention at New York, and, in addition, those of reducing tire costs, accurate accounting methods, inspection and selecting and training drivers. Meeting the problems brought on by the war and the

part truck operators are taking in relieving terminal freight congestion in Greater New York will be interestingly brought out by local speakers.

These truck owners' conferences are purely educational in character. No admission is charged and sales talk is not allowed by any one. Manufacturers of trucks, tires and accessories all agree to abide by this rule. The conferences are primarily to encourage those practical men who are meeting truck problems every day to exchange ideas with others who have perhaps found solutions for the various troubles that are uppermost now.

Contracts for 10,000 Class B Army Trucks are Placed

The following have received contracts for the assembling of ten thousand Class B, standardized war trucks at prices said to range between \$700 and \$800 each. These are Quartermaster Department trucks, as distinct from the standardized heavy trucks approved by the Signal Corps.

It is understood that the Government furnishes all the parts and components and pays transportation to the point of assembly, the work of assembly being paid for at a flat rate which includes the cost of labor, overhead, testing, etc.

1000 Each.

Gramm Bernstein Co., Lima, O.
Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Selden Motor Vehicle Co., Rochester, N. Y.

500 Each.

Bethlehem Motors Corp., Allentown, Pa.
Brockway Motor Truck Co., Cortland, N. Y.
Diamond T. Motor Car Co., Chicago, Ill.
Garford Motor Truck Co., Lima, O.
General Motors Truck Co., Pontiac, Mich.
Indiana Truck Co., Marion, Ind.
Kelly-Springfield Motor Truck Co., Springfield, O.
Kissel Motor Car Co., Hartford, Wis.
Packard Motor Car Co., Detroit, Mich.
Republic Motor Truck Co., Alma, Mich.
Service Motor Truck Co., Wabash, Ind.
Sterling Motor Truck Co., Milwaukee, Wis.
U. S. Motor Truck Co., Cincinnati, O.
Velie Motors Corp., Moline, Ill.
Deliveries commence with the present month and are to be completed before

A cordial invitation is extended to truck owners and operators who are not manufacturers or dealers in trucks or equipment to attend all meetings, Friday morning and afternoon and Saturday morning. A few manufacturers are always invited, but always through the conference headquarters in Chicago, or the Hotel Astor, New York.

Committees have been working for a year on the proposed national standard cost system for motor trucks, with the co-operation of truck associations and national business associations. The system reported at the last conference will again be brought up for discussion and if agreeable to the assembled delegates adopted as standard. It has been arranged that the system adopted shall be distributed at cost of printing, from many sources, without profit to any person or organization. This is in line with the educational character of this co-operative movement, to benefit the truck industry as a whole.

July 1. The idea governing the decision of the authorities to furnish the component parts themselves seems to have been the result of intimations to the effect that such a course would facilitate the financing of the work.

Coal for Steel and Other Industries

Relief for steel and other industrial plants which have been threatened in some instances with complete shut-downs because of the coal shortage, is promised in the appointment by Federal Fuel Administrator Garfield, of C. R. Moriarity, of Cleveland, as the fuel administration's representative to exercise such powers and authority as may be necessary to enable him to perform all of the duties of general director of the coal shippers' terminal pool association, with headquarters at Pittsburgh. This association is in control of carriers operating in the east. Mr. Moriarity will be under the direction of State Fuel Administrators Johnson of Ohio, and Prudden, of Michigan.

No Express Embargo

The rumors which have been circulated within the past few weeks to the effect that the large express companies are refusing to deliver goods on less than 40 or 50 mile distances are unsubstantial. The truth of the matter is that the big companies in and around New York have asked their patrons to have all their short hauls taken care of when possible by the small local express companies. This would permit the big companies to use all their trucks and wagons for hauling to and from the railroad stations.

Aviation Service Needs Men

THE demand on the part of the Government for men skilled in the trades represented by the motor industry, all for service in France, continues to be as great, apparently, as earlier in the war. Especially in connection with the aviation service is this demand very great, there being need not only for mechanics but for helpers. Each airplane will or does call for ten or fifteen men, in all capacities. This means that the aviation section itself soon will represent a good-sized army. In fact, the Signal Corps, of which the aviation section is a part, is today bigger than the entire regular army when war was declared.

Tens of thousands of capable men, therefore, and many of them drawn from the motor industries, will be in the service of the country abroad before many months. This situation, therefore, is one which, according to reports reaching Washington, is causing much concern to employers.

Supplementing the call of the aviation section of the War Department for men, the Navy's flying corps is now seeking the enlistment of 8000 young men for the ground personnel. Emphasis is laid by the Navy Department upon the need for mechanics who will be rated, on enlistment, as machinists' mates, carpenters' mates, quartermasters, coppersmiths and blacksmiths. None of them will be enlisted for pilot's duties, but will receive special training in building, handling, repairing and overhauling the aircraft belonging to the Navy.

Trades Covered by the Ratings

Carpenters, woodworkers, machinists, coppersmiths, blacksmiths, fabric workers, jiggers, acetylene welders, gas-engine repair men, and instrument makers. In this connection, for the first time, most interesting detailed information is furnished as to just what character of work is required in keeping a modern airship in condition. For instance, machinists' mates will be trained in the upkeep and overhauling of aircraft engines and they, naturally, on enlistment must show previous experience in gasoline engine work or any allied skilled trade, such as that of electrician; carpenters' mates will be required to look after the upkeep and repair of wings, pontoons, flying-boat hulls and bodies, balloons, and dirigibles. Their training will cover the practical application of their trade skill to general aviation work; landsman for quartermaster will need have had no previous trade experience, but general manual ability will be necessary; riggers, wire workers, and fabric makers are especially wanted to work on dirigibles or balloons, and those experienced in the operation of hydrogen plants will be given special opportunities for promotion.

The Signal Corps executives, discussing vacancies in the land division of the reserve corps, state that there are no vacancies except in the grade of second lieutenant. These vacancies are to be filled by the promotion of enlisted men. As a result, many who have joined as privates in the past few months, stand chances for promotion to commissioned offices.

One of the many angles connected with the aviation section is suggested in an appeal by the Signal Corps for the enlistment of bricklayers. These will be used, when enlisted, in the building of great American airdromes. As soon as these men are enlisted they will be sent to a concentration training camp to be established in the South, where they will be organized into squadrons for shipment to France. They will have, after reaching France, charge of all construction work entailed in the preparation of airdromes for the continually increasing flow of American air forces over seas.

Still another feature of the Signal Corps service will be the work of making stereoscopic picture records of the war for educational purposes and, to this end, high-grade matched lenses of stereoscopic cameras will be used. These lenses take two slightly different views of a subject, as the two eyes do, and seen through the stereoscope the combined views give a vivid impression of depth and make objects stand out with realistic effect.

Stereoscopic photographic records have been made of every war during the past 20 years, the first having been made in the Greco-Turkish war of twenty-three years ago. The Signal Corps is very anxious that persons who have the necessary high-grade matched lenses will make them available for use by the Government.

Automobile Exports for 1917 Nearly \$91,000,000

During the fiscal year ended June 30, 1917, the United States exported \$27,284,932 of automobile parts. This was a greater value in parts alone than the total value of passenger cars and trucks shipped abroad in the year before the war. During that year automobile parts totaled \$26,574,574.

Of the \$90,958,000 of automobile exports for the fiscal year ending June 30, 1917, \$42,337,315 worth of commercial cars and \$48,620,928 worth of passenger cars were shipped abroad. During the years of 1915 and 1916 a larger number of trucks were exported, the war demand exceeding that for passenger cars. In the 1916 year about 25 per cent of the truck output of the country was exported as compared with only 15 per cent in 1917.

The European Allies, having contracted for the greater part of these exports during 1915 and 1916, are consequently demanding less at the present time. Truck manufacturers, however, are bending every effort toward increased output on account of United States governmental demands, in addition to normal business requirements. During the calendar year 1916 truck output was just under 100,000. This year it is estimated at from 150,000 to 200,000. One reason for this is that, while demand from the belligerent nations is decreasing, that from other countries of the world is steadily on the increase.

Canada, the West Indies and Bermuda, the British East Indies, Argentina, Chile, Mexico and Denmark in the 1917 year took in the aggregate \$27,091,736 of American motor cars as compared with \$16,082,165 in the preceding year. Canada, during 1917 took \$12,088,787 of the amount exported, and leading American companies report a ready market for their products north of the border.

Tariff Commission Investigating War Disturbance of Industry

The United States Tariff Commission, which is now making a preliminary inquiry in industrial and commercial centers looking to the securing of pertinent information relative to disturbances of American industry due to war conditions, is seeking, in this connection, to ascertain particularly the extent to which normal conditions of supply have been disturbed, and what new sources of imports also will be given special attention along this line. The inquiry is expected to develop particularly facts now apparent and tendencies developing in particular lines of industry, new plants and extensions of old plants because of war demands; changes in processes and methods due to war conditions; the more or less permanent character of such changes, and preparations for adjustment to normal conditions after the war. The first inquiry is being made into the present situation as it affects silk, cotton and woolen goods, textiles generally, glassware, earthenware, etc.

To Facilitate Transportation

The Council of Defense for the state of Connecticut is making plans for a test, which, if successful, may do much to relieve congested freight transportation conditions in that state.

According to this plan motor trucks would be used in carrying back loads on return trips, instead of returning empty. Another proviso is the utilization of all motor trucks which are idle part of each day or week.

The Commissioner of Motor Vehicles has asked owners of motor trucks (of which there are 11,500 in the state) to co-operate with him in this movement.

Gasoline Prices Further Reduced in Great Britain

Owing to further reductions in the British Government War Risk Insurance on vessels, all grades of gasoline in Great Britain were reduced by 2d. per gallon (British) from November 26, last, and the equivalent prices now are as follows:

No. 2 War Motor Spirit, 82 cents; No. 3 War Motor Spirit, 80 cents; in Scotland and Ireland 2 cents additional.

For the same reason the price of kerosene has been reduced 2 cents a gallon.

The Truth About the Gasoline Situation

No Attention Should be Paid to the Calamity Howlers, But Reasonable Care Should be Exercised and the Government Trusted

By E. A. STEPHENS

THE nation is engaged in the greatest war of all times and crude oil and its derivatives constitute an absolute necessity in the efficient conduct of that war. It is perhaps natural that many have rushed to the conclusion that as obviously and properly, the Government has first claims on all fuel for internal combustion engines, there will be but little, if any, left for commercial or other uses.

During the past few weeks many of these pessimists have rushed into print with more or less definite statements that not only will there be no gasoline available for passenger cars, but very little indeed for trucks or tractors.

These reports of alleged shortage at length reached such proportions that the "Commercial Car Journal" deemed it expedient to investigate the situation thoroughly and inquiries were made in Washington of all possible authorities, with these results:

Assuming that reasonable care is exercised in reducing waste both in running and in the garage, there will be no difficulty in meeting the legitimate demands of everyone, after adequate care has been taken of our Government in the first instance and of our Allies in the second place.

Will be no Shortage of Crude

It may be stated absolutely definitely that there is no shortage of crude—and there will be no shortage. Stocks of crude were below the mark three or four months ago, but the tide has turned and these stocks are increasing steadily. We are continually drilling new wells, we are distilling the various grades from gasoline down with greater intelligence and more economically in regard to preserving the balance in relation to the demand and, it may be added, the Government controls over forty-million acres of oil producing land which has not been touched so far.

Of course we must all conserve gasoline in the sense that to waste it would be nothing short of criminal, but if we do our share individually and collectively there will be no shortage.

In this connection take a few of the figures published recently by the National Automobile Chamber of Commerce. These figures may be taken as being absolutely accurate. They are posted up conspicuously in the Bureau of Mines in Washington and are used as an object lesson to those who have lingering doubts.

Now there is a "nigger in the woodpile"—but only one, and the matter of his abolition is largely in your hands,

Mr. Dealer and yours Mr. Garageman. It is estimated that nearly 200,000 gal. of gasoline is wasted every day in garages and in washing cars and their mechanical parts. If you take into consideration the fact that additional losses due to bad carburetor adjustment, running engines idle and through losses from tank wagons, bring the estimated total daily loss up to no less than a million and a half gallons; you will realize that it is up to you to do your share in eliminating criminal waste.

You will realize your responsibility all the more when told that the amount wasted commercially in one day is equal to the United States war needs for more than a day and a half.

Present Gasoline Production

Gasoline is now being produced at the rate of nearly seven million gallons per day and under present conditions about half of the quantity is used for the daily needs of all types of motor vehicles. The other half has to take care of all war needs, including exports.

Naval requirements of fuel oil have an obvious bearing on the gasoline situation, but the total quantity used in the navy is not sufficiently great to cause apprehension. Later on, when the oil-burning mercantile fleet now building, assumes larger dimensions, the demand will increase proportionately, but during the interval the work of developing new wells is proceeding rapidly and methods of distillation are being improved continually, so it is perfectly safe to assume that production will continue to increase at least as fast as does consumption.

Distribution is a problem that is receiving a good deal of attention, particularly in view of the fact that our Navy has commandeered a number of tank steamers, thereby cutting off supplies to various refineries from Mexico and other oil-producing centers.

While this fact is, no doubt, inflicting certain hardships in individual cases, the condition is by no means serious—for instance, nothing like that brought about by the holding up of coal deliveries. It is a condition that should be relieved by either (or both) the development of 100 per cent service from pipe lines or by the release of a sufficient number of tank cars to deal with any emergency. This should not be difficult under the Government control of railroads.

Lest it should be imagined that there will be sufficient gasoline owing only to a sweeping reduction in the production of passenger cars during 1918, it should be stated very plainly that the consideration of the sufficiency or other-

wise of the fuel available has been based on normal production, as in the pre-war times.

Common sense tells us that there will be some reduction in the total number of passenger cars built and sold during 1918 in comparison with the 1917 figures, but this will be simply the law of supply and demand. Every potential purchaser can buy his car and also the gasoline to operate it.

From observations made and confirmed from various sources, it is not the desire of the Government to restrict the sale of gasoline in any way and it may be added that it is very far indeed from its wishes that the automobile (or indeed any other) industry should be choked or its development hindered. We hear a lot about the taking over of factories for the purpose of producing government munitions, but at the time this is written the actual situation is that the industry stands ready and willing to take care of more orders than the Government can place, and to do this without interfering with the regular production of trucks, cars or parts in accordance with the factory program.

Of course the question of truck or car production has a direct bearing on that of gasoline supply—one without the other is not of much value to the dealer or the garage man.

Motor Car and Truck Production

It is mentioned especially to emphasize the fact that production will continue to go on steadily, if not quite normally, and that it behooves the dealer to go ahead and make his contracts on the basis of a good year's business in 1918.

This is particularly true of the established truck dealer or the passenger car dealer who contemplates handling the commercial branch of the business as an addition during the coming year. There will be no scarcity of orders for trucks. Once the prospect is assured of ample gasoline at a fairly reasonable price, there may not be a sufficiency of trucks to go around when all the Government demands are met.

Make your minds perfectly easy in regard to the gasoline supply. It is amply sufficient and although no actual figures are now adduced in proof of the statement, it is for the best of reasons that they are withheld for the moment. When the statistics are available, possibly in a very few weeks, it will be shown beyond question that there is gasoline enough, but not to spare. Therefore do all you can to prevent waste and thus increase the surplus.

Unhappy Freight Situation in Baltimore

Very Attractive in Possibilities for Commercial Car Assistance, But Only a Little Has So Far Been Accomplished

By J. M. SHELLMAN

ALTHOUGH all those people engaged in commercial and mercantile enterprises in Baltimore have felt the need of better transportation facilities, and have been affected to some extent by the congestion which has been felt in very part of the country, due to the inability of the railroads to handle the freight situation, nothing, so far, has apparently been done on the part of the municipal or state government in an endeavor to relieve the situation.

Regarding the use of the motor truck as a means by which the situation could be relieved, the following inquiry was made of Mayor J. H. Preston, of Baltimore, by letter, under date of December 24:

"What are the municipal or state bodies in this city (Baltimore) doing to improve the roads for the sake of motor truck freight traffic; what has the Chamber of Commerce done to encourage intercity or intracity shipping by motor truck and has a municipal committee been or will be formed to aid the congestion of freight by the aid of motor trucks such as they now have in Philadelphia?"

"With regard to the intracity freight handling and the reconsignment of freight to and from the various railroad terminals in this city, has the municipal government taken a hand in this to aid, by the use of motor trucks, the congestion, and has there been such a condition to warrant such an action?"

Mayor Outlines Road Work

Under date of December 26 Mayor Preston answered the inquiry, and while he made reply to the first question, for some unknown reason, he did not reply to the questions that followed and so it has been taken for granted that nothing has been done along these lines to relieve the situation. Mayor Preston's letter, in reply to the above follows:

"I have your letter of December 24.

"The city of Baltimore is spending \$1,500,000 a year in new paving operations. This is exclusively used either to replace cobble or to put down paving where no paving at all had been used before.

"The State of Maryland has appropriated \$18,000,000 for state roads, and of this Baltimore City contributes seventy per cent of the total. This appropriation has resulted in all sections of the state being tied together—the Eastern Shore roads running to Philadelphia, the Southern Maryland roads running

to Washington, and Baltimore and Washington connected by a fine state-city boulevard.

"The Hanover Street Bridge, at a cost of \$1,000,000, has been erected, connecting Anne Arundel County and Southern Maryland with Baltimore. This was built from the money of the city.

"Some consideration by public authorities should be given to the limitation of the weight of commercial trucks. Trucks of more than five tons are very serious hazards and many times a distinct detriment to improved paving and concrete and asphalt work, both on streets and bridges.

"On railroads the weight of engines and trains is made to conform to the strength of the structures over which they pass, and this should be so with heavy burdened automobiles.

"Our paving is put down in the most modern and efficient way: 6 in. of concrete, 1½ in. of filler and 1½ in. of topping. This I believe is the most substantial paving that is put down in the United States, and the report of Messrs. Dow & Smith, the municipal engineer, of New York, who have quite recently examined the paving of the city of Baltimore, states it is the best in quality and lowest in price in the United States. Messrs. Dow & Smith have a wider knowledge of paving conditions in the United States than any other engineers. They represent one hundred municipalities.

"Yours very truly,

(Signed) "James H. Preston,
Mayor."

about December 13, Mayor Preston received a letter from the Board of Trade of Baltimore, asking that he consider the advisability of creating a commission to work out a solution of the railroad terminal problem in Baltimore. This matter was taken up with the Board of Awards by the Mayor and it received favorable consideration but before a decision was reached as to how the commission would best render valuable service to the city and to the railroads as well, it was the purpose of the Mayor to consult influential citizens on the matter. The commission, if formed, it is understood, is to act in unison with the Government. At the time of the discussion it was suggested by the Mayor that the commission be composed of the members of the Board of Trade, the Chamber of Commerce, the Merchants' and Manufacturers' Association and other trade bodies besides city engineers and representatives of railroads

whose lines run into the city of Baltimore.

Inquiries have been made at several sources, including the publicity department of a leading railroad in Baltimore, the agency of a large fertilizer company and a large transfer company. At each of these places it was found that nothing had been heard regarding the possibility of such a committee or commission being formed in Baltimore to direct the freight situation pertaining to the removal of the freight from the railroad terminals in Baltimore such as has been in existence since December 1 in Philadelphia.

But from the above mentioned sources the following facts have been gleaned relating to the situation as it now stands.

From W. T. Moore, agent of the Baltimore & Ohio Railroad Co., at Locust Point, it was learned that as far as the Baltimore & Ohio was concerned, the motor truck has not been used for intracity haulings and that the transferring of freight from different points around the city is being carried on as always. When Mr. Moore was questioned as to whether a man wishing part of a carload of material that has been consigned to Locust Point, transferred to Canton, would the car be taken around on the railroad tracks, the answer was yes. It was further added that the Baltimore & Ohio had not taken up the motor truck problem as far as was known, and that no other railroad in Baltimore was handling the situation in the manner mentioned—by using motor trucks.

Trucks Used Little So Far

From an employe of the Blue Line Transfer Co. it was learned that as far as was known there had been no arrangement made on the part of the railroad to relieve the freight congestion by the use of the motor truck for intracity hauling, but further information revealed the fact that the railroad has an arrangement with the Blue Line Transfer Co. for the trucking of oysters and potatoes from the steamboat wharves in Baltimore to the terminal point when such freight is to be shipped to distant points over the Baltimore & Ohio. The cost for this drayage is ten cents per barrel and this charge is included in the freight charges by the railroad to the shipper. In order to release 34 cars recently, this number came into Camden yard loaded with bridge girders for the American Bridge Co. and instead of the cars being held until the

The State of Maryland Has Appropriated Eighteen Million Dollars for Good Roads

girders could be unloaded to trucks for their destination, they were immediately dumped into the yard, the cars released and the Blue Line Transfer did the rest of the hauling. This company has now added to its equipment two Federal 3½-ton trucks which will be used to handle freight around the city. They tried the trailer attachment, but without success, owing to the impossibility of backing up to the pavement. My informant was very enthusiastic in his statement regarding the possibilities of the motor truck. He said that with one of these trucks a man can knock out between \$25 to \$35 per day drayage charges, while with a team and wagon one man generally earns about \$5 to \$7 drayage and it is only an exceptional man on a good day that can earn about \$10 a day with the team and wagon. Regarding long distance hauls he stated that the motor truck is far superior for say, taking a load of 7000 lb., it would require the services of two men and two teams, while one motor truck could carry the whole load and cover the distance both ways while the two teams and two men were only covering half the distance. The company could not change all its equipment to motor vehicles, however, because there are some alley ways through which the trucks will not go.

Trucks Used for Long Distance Work

It is also understood that there is a regular line of motor trucks operating between Baltimore and Camp Meade to carry supplies. A large coal company of Baltimore has recently taken up the handling of intercity shipments within a radius of 250 miles of Baltimore and has been renting trucks out at about \$50 per day.

Then again, according to a man prominently connected with a large fertilizer company in Baltimore, there has not been a whisper relative to the motor truck being used to handle the shipments of freight which are re-consigned in Baltimore from one terminal point to another, or that the congestion would be relieved in this manner. This party stated that it takes a car about three weeks to be taken from Mt. Clare to Canton over the Baltimore & Ohio tracks and during the present crisis, even longer. The same conditions exist on the other lines running into Baltimore, he said. The switching charge for this amounts to \$8 per car, which is regulated by government tariffs.

When embargoes were declared by the general operating committee of the Eastern railroads, according to the resolution which was adopted by this body and made public about December 10, of course the movement of freight within the switching limits of Baltimore was greatly affected. This resolution read as follows:

"Resolved, In order to relieve terminal railroad congestion as well as to

release freight cars for longer haul use, which is a public necessity, interested lines are ordered to place the following embargoes within the ports of Boston, New York, Philadelphia, Baltimore and Newport News.

"First—Effective, Monday, December 10, against all less than carload intracity freight.

"Second—Effective, Monday, December 24, against all carload intracity freight.

"Third—Effective, Monday, December 10, against any intracity reconsigned privilege after an incoming freight car has been placed in accordance with original billing instructions."

No sooner had this order been placed in effect than Arthur W. Thompson, vice-president of the Baltimore & Ohio Railroad Co. and chairman of the operating committee, was interviewed by a representative of one of the Baltimore papers and is reported to have said that in regard to the new intracity embargoes that have been placed in all important cities of the East, including Baltimore, this was to prevent the tying up of freight cars for any longer period than was necessary. Under the present way of doing business it may mean that a car will be held five days or more to move it as little as one mile within the city limits. The consignee is allowed 48 hours to unload his car, and if he wants it moved from the original terminal he may still claim another 48 hours. In this way cars are kept lying idle an unnecessary length of time when they might be released for the longer runs that really count for something in the moving of freight. Now, instead of keeping a car in the city for several days, the freight will be unloaded immediately and carried to its destination on automobile trucks. The car can then be sent back to be reloaded, and in this way made to give the greatest possible service.

Unnecessary Congestion at Points

About the middle of December it was brought to the attention of Frank N. Hoen, president of the Merchants' and Manufacturers' Association, that freight which belonged to the merchants of Baltimore, amounting to about 20 carloads, was piled up in confusion on one of the steamboat wharves. The matter was immediately put into the hands of A. E. Beck, traffic manager of the association, with the result that within two days hundreds of merchants had been notified that freight consigned to them was on the wharf and asked to get it without delay. This was done and the removal accomplished in two days. But it is understood that the majority of merchants did not know the freight on the wharf was theirs. The M. & M. A. has signified a willingness to continue this work whenever necessary.

With regard to the problem now facing the State Roads Commission pertaining to the maintenance of the roads in good condition, it has been found that great damage is being done to the highways of Maryland, due to the fact that so many heavy motor trucks are being driven over them on government missions. According to the facts outlined, the trucks of higher tonnage, under the present laws, pay very little more for their licenses than the smaller ones. Legislation will probably be asked to make the licenses for these large trucks more than they have heretofore been, in order that the damage done by them will be compensated. The Roads Commission has also had trouble in keeping the roads up, due to the fact that cars for transporting the material necessary for repair work are scarce, and at the same time, they cannot get the cars unless consented to by the government.

In regard to what Governor Harrington, of Maryland, thinks concerning whether the state should have good roads or not, he is reported to have made the following statement: "Our new roads have been costly. Without them our treasury would be in a most excellent shape. But who is so foolish as to deny the benefits and conveniences of our good roads."

Motor Truck Transportation Attracting Dealers

The Jackson Motor Car Co. of New England, Boston, has taken on the Fulton 1½-ton truck. A. H. Sowers gave as the reason that they realize that the motor truck industry is just at the beginning of its upward climb where the passenger car business was 10 years ago.

"A month ago," said he, "when I was at Washington all you could hear on every side was motor truck transportation. Officials were seething with it. The railroad heads had stated their inability to accept all the freight offered and the salvation of short hauls was the truck."

"Here in New England with all the arteries of travel tapping the big manufacturing communities, it makes the most fertile field for commercial vehicles. And knowing this I decided that it was time to enter the truck field."

Pierce Arrow Trucks for Army Use

Forty-six Pierce Arrow 2-ton trucks for use in France left Buffalo for tide-water on New Year's day, proceeding under their own power eastward through Batavia and Rochester. These are the first Pierce Arrow trucks turned out by the Buffalo firm under the war contract let last fall, although this company has sent a good many trucks to France on orders by the Allies, and has other trucks in army service.

Who is so Foolish as to Deny the Benefits and Conveniences of Our Good Roads?

Auto Freight Highly Developed in Seattle

This Section Has Suffered Little From Railroad Congestion Because of Extensive Use of Motor Trucks for Short Hauls

By WARREN EUGENE CRANE

THE Transportation Bureau of the Seattle Chamber of Commerce and Commercial Club has recommended that shippers use motor trucks wherever possible to carry loads to cities and towns within a reasonable radius from Seattle. This step has been taken in order to relieve the railroads of the excessive pressure upon them resulting from a heavy traffic in food and war materials. The execution of the military program of the country is deterred every time that a freight car is used for short hauls when a motor truck could do the work just as well. It is the patriotic duty of every manufacturer, wholesaler or jobber to ship his goods with gasoline power in order to prevent freight congestion in the railroad centers of the nation.

The pursuance of a policy of using motor trucks has resulted in very little congestion in spite of the fact that for the calendar year of 1916 Seattle was the fourth port in total imports and exports, while in April, May and June, 1917, it was the second port in the United States in this branch of commerce. The big increase of traffic passing through the port of Seattle may be determined from the following statistics: For the fiscal year ending June 30, 1916, the imports were \$76,186,529; exports \$109,978,874 and total \$186,165,403, while those for the year ending June 30, 1917 were: Imports, \$156,330,458; exports, \$120,417,099, and total, \$276,747,557.

There are four important reasons why

Seattle is not suffering from the acute freight congestion that is prevalent in Eastern cities:

1. The policy of prominent shippers, who use motor trucks for intra-city shipping.
2. The network of auto freight lines running to every city and town within a radius of forty miles.
3. Immense storehouses and docks

under the management of the Seattle Port Commission, fitted with electric carriers that are capable of handling freight efficiently and expeditiously.

4. The activities of the Car Service Bureau composed of leading officials of the transcontinental railroads centering in Seattle, which is extending every effort to prevent freight from accumulating unnecessarily.



One of the Trucks Used to Carry Freight From Seattle to Sumner, Washington



Trucks Running to Towns Among the Cascade Mountains, Inaccessible to Trains

"Seattle's freight traffic problems under present abnormal transportation conditions cannot be compared with the situation facing many of the large eastern cities," said B. R. Myers, assistant manager of the Seattle Chamber of Commerce and Commercial Club. "The exceptionally fine roads radiating from Seattle are bringing about the increased use of auto trucks, particularly at the present time when railroad equipment throughout the country is at such a premium.

"Seattle, located geographically as it is on Puget Sound, has excellent water facilities, which place at its command many good avenues for distribution. This has had a marked effect in relieving congestion, particularly as it pertains to freight traffic destined to nearby cities.

"The railroad freight car is, and doubtless always will be, used to a greater or less extent for the transportation of certain traffic from and to points within the corporate limits of the larger cities of the country.

"To-day shippers are viewing transportation problems from a more patriotic

It Is the Patriotic Duty of Everyone to Ship His Goods With Gasoline Power

standpoint and realize the necessity of keeping railroad freight equipment in service. This is resulting in a material reduction of its use in what is generally known as intra-terminal switching, and the substitution of auto trucks for this service.

"The congestion caused by the World War has been more or less marked for the past two years, but has not affected Seattle to any great extent, and particularly to the extent of the congestion of other large centers and world ports.

"Seattle and contiguous territory has exceptional distribution and hold-yards, as well as exceptional facilities for handling foreign traffic. While at times there has been slight congestion owing to lack of ships, this has not seriously affected local conditions owing to the excellent facilities for holding export and import freight until bottoms are available."

Where formerly shippers would send goods in freight cars to the Great Northern dock at Smith's Cove, which is about four miles from the wholesale center of Seattle, they are now sending them by motor trucks for patriotic reasons. This is giving the railroads a better opportunity to use their freight cars for through traffic to eastern cities.

Much Freight Carried by Trucks

"Ninety per cent of the milk and vegetables consumed in Seattle is brought into the city by auto freight companies," said Oscar Hammargren, manager of the Valley-Line-Auto Freight. "I would also say that seventy-five per cent. of the freight coming into this city from a radius of forty miles is carried by the various auto freight companies. Our line runs to Puyallup, Kent, Sumner, Auburn, Tacoma and Camp Lewis, located at American Lake, sixty miles away. Our charges are a little higher than that of the railroad, but the net cost to the shipper is less because we deliver goods direct to the house, store or factory of the buyer. The amount that we charge in excess of the railroads is more than offset by the cartage costs that the consignee has to pay when he carries his goods from the freight depot to his place of business."

The Valley-Line-Auto Freight operates two 3½-ton Velie trucks and one 4-ton Moreland truck. The operating costs for each truck, including driver's salary, gasoline, lubricating oil, depreciation, tires, insurance, grease, repairs and storage average \$175 per month. They use distillate successfully with their Moreland truck, and state that they find it saves them fifteen per cent. on their operating costs.

The Hayden & Smith Transfer Co., Inc., furnishes automobile truck service to Edgewick, Tanner, North Bend, Snoqualmie, Tolt, Fall City, Redmond, Preston, High Point, Issaquah, Wilburton, Bellevue, Medina, Newport, Des Moines, Rockdale and points on Vashon Island. The company operates one 3-ton Locomobile, one 3-ton Mack, one ¾-ton Willys, one Ford light delivery car and three Packard trucks of 1½, 2 and 3-ton capacity respectively.

"Our rates are from 15 to 50 per cent more than that of the railroads, but we are forced to charge more because our expenses are greater in proportion to our territory," said A. C. Smith, secretary of the company. "We keep an accurate account of our depreciation, tires, gasoline, oil, grease, insurance, repairs, drivers' salaries and storage, office rent, and we know that we have to charge our scale of rates in order to make a reasonable return on our investment. Furthermore we give our shippers quicker service than the railroads for a radius of fifty miles from Seattle.

"A few of our competitors started in cutting rates and they were forced out of business. The man who is unsuccessful in operating an auto freight truck usually figures merely his gasoline, tires and repairs, overlooking depreciation and insurance. It is my belief that an auto freight company must charge at least fifteen per cent. more than railroads in order to make a reasonable amount on its investment.

"Since the auto freight service began we have had several improvements in the roads. Most of this work has been done by a combination of the expenditures of the counties and the state. When we started in, the road to North Bend was a

radius of fifty miles. We follow the same method of classification as the railroads."

The Seattle Auto Freight Co. is an incorporated company, the stockholders of which own motor trucks. It is run on a co-operative basis and each truck owner pays his pro rata share towards the \$100 a month rent for the company's depot, as well as the salaries of the manager, bookkeeper and floor men. After all expenses are paid at the end of each year the stockholders divide the remaining surplus. The business has been a profit-making one during the past year.

The company operates fourteen motor trucks to the following places: three to Kent and Auburn; three to Ballard; two to Issaquah; one to Tolt, Stillwater and Carnation; one to Bothell; one to Kirkland; one to Renton; one to Sumner and one to Snohomish. They are required to charge a three per cent. war tax on all bills of lading. The rates for hauling are those set by the Team Owners' Association of Seattle, while the freight is classified according to the schedule issued by the Western Classification Committee, with headquarters in the Transportation Building in Chicago.



It is Such Trucks as This That Are Preventing Freight Congestion in Seattle

streak of mud, but now this has been replaced by five miles of paving. Three miles of paving have been done near Redmond, and an entirely new road has been built to replace the old path which was very muddy and steep. All of these improvements are part of the Sunset Highway, which cuts through the Cascade Mountains at Summit Pass.

"The auto freight business is very steady and we nearly always have a load. The railroads are more interested in long haul shipping in carload lots, so we get our work from the smaller shipper who sends his loads to the towns and cities within a

"We have found the freight situation in Seattle normal," said J. L. Bracklin, manager of the Seattle Auto Freight Co. "The only congestion is due to a lack of steamships to handle through freight. The co-operative basis upon which we work is very satisfactory, and I predict that within a few years all of the auto freight leaving Seattle will go from our depot, because it means a saving in office rent, light, accounting and worry over details to the truck owners. The tendency is toward the centralization of the small freight lines of the individual owners into a big business under one directing head.

"We Give Shippers Quicker Service Than the Railroads for a Radius of Fifty Miles"

"We have had a large number of road improvements and bridges widened since we started in the auto freight business. I think that the advent of the motor car and motor truck has accelerated these changes."

Emil Arneson, one of the truck owners connected with the Seattle Auto Freight Co. said: "I find the co-operative system very satisfactory. I operate one 4-ton Locomobile, one 1½-ton Federal and one 2-

ton Federal between Seattle and Redmond. The depot in Seattle brings me more business than when I work alone. My expense for each of my machines, including drivers' salaries, gasoline, lubricating oil, tires, depreciation and insurance averages \$175 per month."

One of the leading officials of the Seattle Car Service Committee stated that the members of this organization are now negotiating with public regulative bodies for

the adoption of embargoes similar in nature to the one placed in effect by the Philadelphia District Committee on Car Service.* Their policy is to discourage intra-city shipping and to turn over all of this business wherever possible to motor trucks. The shipper should "do his bit" for the country by assisting the execution of this program, for it is of great importance to the United States during the critical period through which it is now passing.

Cross-Country Moving by Motor Vans

One Class of Freight the Railroads Are Rapidly and Willingly Relinquishing to the Commercial Motor Car

By FRANK FARRINGTON

THE moving van is familiar enough to folks in the city, but it is something of a novelty on a cross country road, a hundred miles from the metropolitan district. But, those who have been driving over the country roads or taking long distance trips of any kind lately, have noticed a good many of these vans. They may be found almost anywhere.

A van as big as the house whose goods it is to move, piled full to its top, with chairs, beds, sofas, clothes horses and ironing boards reaching out behind like the tail of a comet, does not fit the country roads as well as it fits the broad city boulevards, but whether it fits or not, it is going to pre-empt roads narrow and broad during 1918 as it has not done before.

People must move or pay rent and some say it is cheaper to move. At all events there are at all times thousands of families on the go and hitherto they have been able to get a box car when they wanted it and move via the Water Level Route or the Road of a Thousand Wonders, or some other railway. Nowadays a box car empty and waiting for a load is about as common a sight as a blue moon, so people order a motor van to pack them up and take them where they want to go, whether it is one mile or a thousand—and it does.

Not all moving van companies are equipped for this long haul business, but those who are are getting it to do and they are making money at it. There is going to be more demand for this sort of trucking and it behooves the commercial car salesman to interest his prospects in preparing for the coming increase in a line of business that has heretofore gone entirely to the railroads.

This is just one phase of motor trucking at long distance, but it is one that is mighty important. A furniture van carries a large quantity of goods when properly loaded. The goods are often bulky and no one can move from town to town by rail without taking at least one freight car. One freight car is not to be had, and anyway it is worth while to move by van and leave the freight car for the use of the Government.

What the commercial car salesman should do is to canvass all the trucking concerns in his territory and see that every one is equipped to do long distance moving. If he does not succeed in selling one or more vans to a man he can sell him, at least, a van top for one of the trucks he already owns.

If there is just one concern in a city that shows a real interest in going after this business, let the salesman urge that one man to make a specialty of it and see if he can't get most of the business. Then too, it can be suggested to him that he solicit orders far enough in advance so that he can look up return loads from each point to which he must go. Perhaps the agents of the same line of trucks in other towns can be induced to help the truck and van owners to get return loads, if the courtesy is reciprocated for their customers.

A good plan might be to install a department of information for movers and advertise that names of concerns equipped to do long distance furniture moving can be supplied. Upon application the truck dealer could give the names of his customers and if such customers saw fit to keep him advised, he would be in a position to say which ones had trucks or vans ready for immediate use. At all events, the extra publicity he could give the concerns buying from him would be appreciated by them and would be a worth while service on his part.

Just as drug stores keep a file of physicians and trained nurses for the reference of the public, so he could supply motor van information. He could even use his advertising space occasionally to recommend to the public that they select for their moving, concerns using "Blank" vans because of the stability of those vans and the certainty of their being able to make their trips without break-downs and delays.

One may complain that if he takes up this sort of thing, his competitors will do likewise. Well, some of them will and some of them will not be sufficiently ambitious. At all events the one that does it first will get the big end of the resultant advantage, and if he does not do it and

his competitors do, what then? It is a poor excuse for not hustling for trade that if one does hustle the other fellows will have to hustle too.

Another thing that can be done in the way of service to both moving families and motor van folks, is to offer to route their trips for them. The dealer might advertise to the general public that anyone having to move to another town will do well to consider the advantages of moving by motor van and then ask all people contemplating moving to come and secure such assistance as he can give in the way of information about the shortest or the most economical route, the conditions of the roads, etc. He might also get the schedule of rates from the motor van people and call attention of the people to the fact that he can quote them approximate prices.

If a man knows that he can come to a disinterested party and get the information he wants, he will come quicker than he will go to the van people because he will feel no apprehension of being robbed. It can be made plain that the dealer gets no rake-off on the business, but that he does it in the interest of the conservation of railroad equipment and the general good.

The moving van people too will be glad of assistance in routing their trips and the dealer will be in a better position to look up routes than they.

Of course the more business one stirs up in the way of long distance moving, the busier his customers are going to be and the more trucks they are going to need. If more business is sent a man than he can handle he will begin to think of adding another truck or two to his equipment. The best way to prove to a prospect that there is some of this business waiting for him is to send the actual customers to him.

It is very likely that consultation with the local railroad officials will result in their being willing to refer to the truck dealer any inquiries made by parties wanting to move, and this will add to his ability to help the van man.

It will be easy for both the dealer and the van people to make it plain to the moving public that moving by railroad is at best a very uncertain proposition right now.

Motor Van Companies Equipped for Long Haul Business Are Getting It to Do

Cars are not to be had and delays are inevitable when the goods once get started. Transportation by railway has become so slow that to move in that way means to have to live without a home from two to six weeks on a very moderate distance shipment.

When a family moves by motor van, it knows where its stuff is all the time and it knows it is getting along toward its destination with all possible speed and no such delays as the railroad offers. Van moving is going to be the popular method from now on and it is a wise truck salesman who lays his plans to take advantage of the fact.

Truck Transportation in the Southwest

That the best solution of the freight problem in the Southwest is the truck has been proved in different sections of Texas during the past few weeks. Failing to get freight cars for the shipment of food-stuffs and other necessities, many wholesale concerns in Dallas and other large cities in the state have purchased larger trucks and with them are delivering supplies to nearby towns. In some instances the supplies are being hauled in this way for a distance of one hundred miles. In addition, trucks are being used in hauling cattle to marketing place. Recently Chandler and Carver, cattle dealers at Farmersville, seventy-five miles from Dallas, hauled forty head of cattle to the Fort Worth Market. The animals were loaded on five big Republic trucks and hauled from Farmersville to Fort Worth, about one hundred miles, in a little more than ten hours. This it is claimed is about as fast as they could have been shipped on freight trains and the expense was no more than would have been the freight charges. Mr. Chandler stated later that the company intended using this mode of transportation exclusively in future.

Post Office Displaces Railroads by Trucks

Postmaster A. S. Guffy, of Pittsburgh, Pa., intends to use automobile trucks as mail carriers on two long routes, and thus to do his bit in relieving the railroads.

One line will connect Pittsburgh and Wheeling, W. Va., a distance of 60 miles. The other will operate between Pittsburgh and Cumberland, Md., a distance of 140 miles. The first is a single-day round trip and the second is a two-day run.

Farm produce will be carried as parcel post, in addition to the regular mail matter. The service will start just as soon as the truck contracts can be let.

Keep the Roads Open

Do Not Let Snow Block the Government

WE DECLARED war against Germany absolutely confident that the man and material power of the United States would hasten victory for Democracy—nothing must interfere—nothing will.

The President, in his far-sighted proclamation of April 16, 1917, stated plainly the duty of our producers and handlers of necessities.

Our captains of industry realized at once that our President expected them to increase production—then more production and more production—and to keep on increasing production for the requirements of our Government and our people.

As production is increasing and our army is being created, former transportation facilities are being overburdened.

Enormous tonnage of both men and materials is being carried over our highways, for short and long distances, by motor trucks. The use of motor trucks is increasing daily.

The necessary highways must be kept open for continuous automobile traffic every hour of every day throughout the winter—*there must be no delay in breaking any snow blockades.*

Our American army of four million automobile trucks and passenger cars can be of tremendous assistance to the various State and local highway authorities in keeping the roads open for traffic.

Chambers of Commerce, Boards of Trade, Public Safety Committees, enlist your members to assist in hauling snow ploughs, shoveling out drifts, constructing windbreaks—above all, *keep the wheels moving*; a well-traveled road is hard to block.

We repeat: Necessary highways are those leading to communities that are now being relieved by motor truck transportation. *These highways must be kept open.*

It is not fair to burden the railroads where it is possible to use motor trucks.

THE AUTOCAR COMPANY, ARDMORE, PA.

Manufacturers of "The Autocar Motor Truck"

An Unselfish Form of Advertising In the Interest of the Public That Will Incidentally Benefit the Industry and With It the Advertiser

INCREASED

PRODUCTION

NECESSARY TO

VICTORY

MOTOR

TRUCK

RELIEF

KEEP HIGHWAYS

FREE FROM SNOW

CIVIC

RESPONSIBILITY

Buyers' Information Commercial Car Review

(Eastern Section)

On the following pages is given a complete review of the Commercial Car Models that will be manufactured for the coming season by Eastern American Manufacturers.

See Complete Indexes on Pages 51 and 52

THIS is the first or Eastern Section of the Review, and includes cars manufactured in the following States: Connecticut, Delaware, District of Columbia, Georgia, Kentucky, Maryland, Massachusetts, New York, New Hampshire, New Jersey, North Carolina, Ohio and Pennsylvania.

The second or Western Section will be issued February 15th, and will contain a review of cars made in the following States: California, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, Nebraska, Oregon, Texas, Washington and Wisconsin.

The data given in this Review was supplied direct by the makers.

Key to Abbreviations will be found on the leaf attached to this page; when this is opened out it will be found very convenient for references. Indexes will be found on pages 51 and 52.

Criticisms on this Buyers' Information Review are invited.

Horse Power Formula.---All horse powers are calculated by the S. A. E. formula: $H. P. = \frac{D^2 N}{25}$, where D is the bore in inches and N is the number of cylinders.

The other side of this leaf contains the key to the abbreviations used in the

Buyers' Information Commercial Car Review

While consulting the Review turn this leaf out so that it extends beyond the book; it will then be found very convenient for immediate reference.

Indexes arranged alphabetically and according to price are on pages 51 and 52.



KEY OF ABBREVIATIONS

Used in the Specifications of Cars Included in the Annual Commercial Car Review

Price: Price given in the captions is for the car complete with body as illustrated, unless otherwise stated.

Engine: Beav—Beaver; Buda—Buda; Cont—Continental; Dues—Duesenberg; Emer—Emerson Engineering Co.; Falls—Falls; Ferro—Ferro; GB & S—Golden, Belknap & Swartz; Gray—Gray; H-S—Hall-Scott; Herc—Hercules; H-Sp—Herschell-Spillman; Key—Keystone; Knht—Knight; LRoi—LeRoi; Lew—Lewis; LM & F—Light Mfg. & Fdry. Co.; Lyco—Lycoming; Mac—Macomber; Mk-P—Massnick-Phipps; Nort—Northway; NAMC—North American Motors Co.; Own—Own; Opt—Optional; Preh—Pruch; Rutn—Rutenber; Strl—Sterling; Somr—Sommer; Tetr—Teetor Hartley; Wauk—Waukesha; Weid—Weidley; Wis—Wisconsin.

How Cooled: A—Air; C—Centrifugal Pump; G—Gear Pump; T—Thermo-Syphon; W—Water; P—Water pump.

Make or Type Radiator: Br—Bremer; Bus—Bush; C—Cellular; Can—Candler; Fed—Feddars; H—Honeycomb; Har—Harrison; Lng—Long; May—Mayo; Per—Perfex; T—Tubular; V—Vertical.

Carburetor: Aut—Automatic; B & B—Ball & Ball; Buic—Buick; Cart—Carter; Ens—Ensign; Exc—Excelsior; Fleh—Flechter; Gem—Gem; Holl—Holley; Har—Hartman; Hea—Heath; H&M—H & M; John—Johnson; King—Kingston; K-D—K-D; Lgm—Longmare; Mar—Marvel; Mast—Master; May—Mayer; Mil—Miller; New—Newcomb; Own—Own; Opt—Optional; Rayf—Rayfield; Rob—Richenbach; Stew—Stewart; Strm—Stromberg; Shk—Shakespeare; Sheb—Schebler; Spe—Special; Till—Tillotson; Zen—Zenith.

Ignition System (Make or Type): At-Kt—Atwater Kent; Aut-L—Auto-Lite; AmrB—American Battery; Bosh—Bosch; Berl—Berling; Brig—Briggs; Conn—Connecticut; Delc—Delco; Det—Detroit; Dix—Dixie; Eism—Eisemann; Enty—Enty; G&D—Gray & Davis; Hein—Heinze; King—Kingston; May—Mayer; Mea—Mea; Nat—National; Opt—Optional; Remy—Remy; Simm—Simms; Spld—Splitdorf; U&H—U&H; West—Westinghouse; Will—Willard; Mag—Magnet.

Engine Starter: Apel—Apelco; Al-Ch—Allis-Chalmers; Au-L—Auto-Lite; Air—Air; Bosh—Bosch; Bij—Bijur; Delc—Delco; Disc—Disco; Det—Detroit; Dyn—Dyneto; El—Electric; Entz—Entz; G&D—Gray & Davis; Hein—Heinze; L-N—Leece-Neville; NE—Northeast; Own—Own Make; Opt—Optional; Remy—Remy; R&M—Robbins & Myers; S-H—Simms-Huff; Spld—Splitdorf; USL—USL; Wgr—Wagner; W-L—Ward-Leonard; West—Westinghouse; Ex—Extra; 1—Single Unit; 2—Double Unit.

Rear Axle: ABB—American Ball Bearing Co.; AG Co—American Gear Co.; Cel—Celfor; Clev—Cleveland; Col—Columbia; Det—Detroit; Dead—Dead; AG&M—American Gear & Mfg. Co.; Emp—Empire; Gemo—Gemo; Hay—Hayes; Hess—Hess; Jbsn—Jacobson; Mott—Mott; Own—Own; Peru—Peru; Russ—Russell; Sals—Salisbury; Sheld—Sheldon; Timk—Timken; Torb—Torbenzen; Wal-W—Walker-Weiss; West-M—Weston-Mott; Flot—full-floating; 1/2-fl—semi-floating; 3/4-fl—3/4-floating; 7/8-fl—7/8-floating.

Tires: Solid unless otherwise stated: *, pneumatic; D—Dual; T—Triple.

Wheelbase: Opt—Optional.

Lubrication: C—Centrifugal Pump; Fo—Force Feed; F&G—Force and Gravity; FS—Force & Splash; Gr—Gravity; Sp—Splash Feed; P—Water Pump.

Clutch: B—Band; C—Cone; D—Disc; I—Individual Clutch; U—Unit Control.

Drive: B—Bevel Gear; C—Chain; Ct—Concentric Spur; F—Friction; I—Internal Gear; O—Own; R—Roller; S—Shaft; SB—Spiral Bevel; Sp—Spur; W—Worm.

Transmission: B-Lipe—Brown-Lipe; Cott—Cotta; Covt—Covert; Det—Detroit; Durst—Durst; Entz—Entz; Fric—Friction; Full—Fuller; G-Lee—Grant-Lees; I-CI—Individual Clutch; Jbsn—Jacobson; Lefv-A—Lefever Arms; Magn—Magnetic; MM Co—Mechanics Machine Co.; M.M.—Motor Machines; Munc—Muncie; North—Northway; Plan—Planetary; Prog—Progressive; Rock—Rockford; Selec—Selective; Warn—Warner.

Spring Suspension: Cant—Cantilever; Elip—Full-elliptic; S-El—Semi-elliptic, 3/4-El—3/4-elliptic, S&3/4—Semi-elliptic and 3/4-elliptic; S&C—Semi-elliptic and cantilever.

Governor: C—Centrifugal; Dup—Duplex; McC—McCanna; Mon—Monarch; Pier—Pierce; Rug—Ruggles; Simp—Simplex.

EXTRA ABBREVIATIONS USED ON ELECTRICS

Battery: Exid—Exide; Edis—Edison; Gld—Gould; Opt—Optional. Own—Own; Phil—Philadelphia.

Motor: Gn-El—General Electric Co.; Own—Own; Wgr—Wagner; West—Westinghouse.

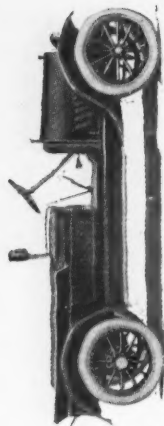
Controller: Bl—Barrel; C-H—Cutler-Hammer; Gn-El—General Electric; Own—Own; Wgr—Wagner; West—Westinghouse.

Steering Gear: Lvr—Lever; Own—Own.

Indexes arranged alphabetically and according to price are on pages 51 and 52



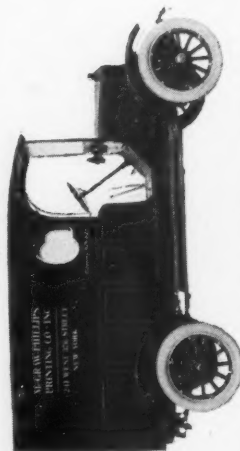
Overland, 800-lb. Panel Delivery, \$810.
Willys-Overland Co., Toledo, Ohio.



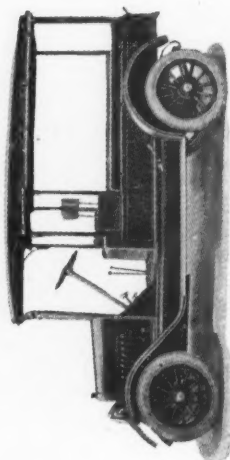
Hatfield K, 800-lb. Light Express, Chassis, \$840.
Cortland Cart & Carriage Co., Sidney, N. Y.

800 Pound Gasoline Commercial Cars

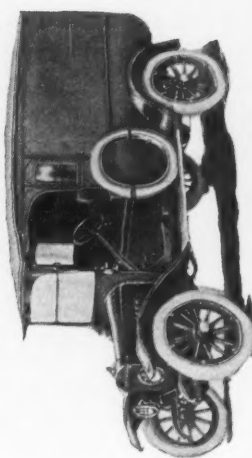
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Size of Piston Rings	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pt. Cent of Weight on Rear Wheels
Hatfield K Overland	1700	840	Own	3 3/4 x 4 1/4 3 3/8 x 5	22.5 18.2	4 4	4 4	4 4	L T	T L	C C	Strm Till	Conn Conn	Disc Au-L	Sp Sp	D C	B B	Selec Selec	3	Flot 3/4 Flot	4.3-1	106 104	31x4* 31x4*	31x4* 31x4*	....	64



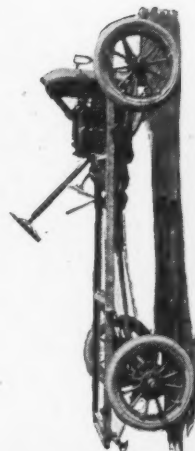
Rainier Model R-1, 1000-lb. Panel, \$1145.
Also Open Flare-board, \$1155; Panel, \$1130; Covered Flare-board, \$1110.
Rainier Motor Corp., Flushing, N. Y.



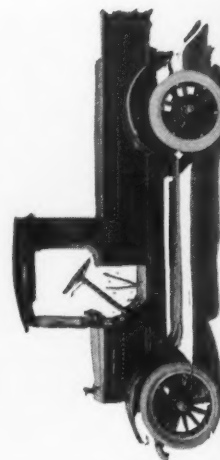
Bell B, 1000-lb. Open Flareboard, \$970.
Also Stake, \$950; Panel, \$995.
The Bell Motor Car Co., Inc., York, Pa.



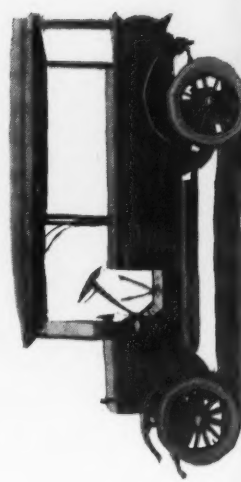
Champion 1000-lb. Light Delivery Chassis, \$775.
Champion Motors Co., Cleveland, Ohio.



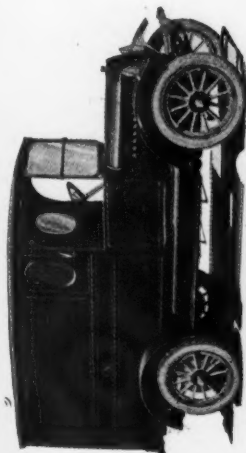
Norwalk 1000-lb. Chassis, \$775.
Norwalk Motor Car Co., Martinsburg, W. Va.



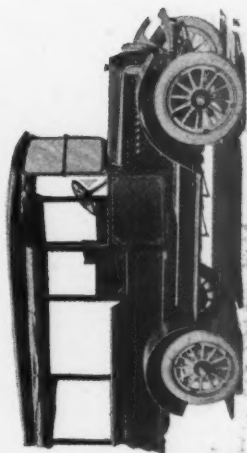
Rainier R-1, 1000-lb. Open Flareboard, \$1155.
Also Panel, \$1145; Panel, \$1130; Covered Flare-board, \$1110.
Rainier Motor Corp., Flushing, N. Y.



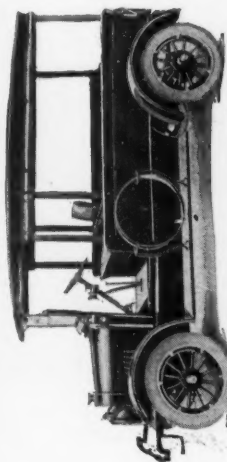
Rainier R-1, 1000-lb. Covered Flareboard, \$1110.
Also Panel, \$1130; Panel, \$1145; Open Flare-board, \$1155.
Rainier Motor Corp., Flushing, N. Y.



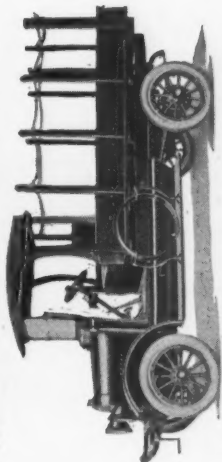
Rush Model F, 1000-lb. Panel, \$885.
Covered Flareboard, \$965.



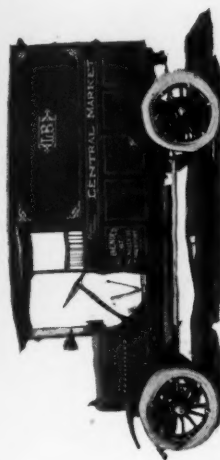
Rush F, 1000-lb. Covered Flareboard, \$965.
Also Panel, \$885.
Rush Motor Truck Co., Philadelphia.



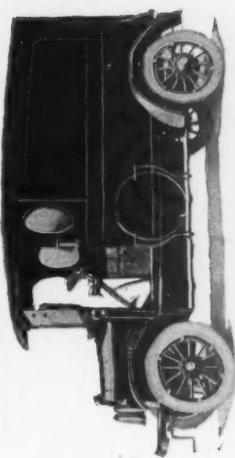
Vim Model F, 1000-lb. Open Express, \$815.
Also Closed Panel, \$845; Cab Top Express, \$845;
U. S. Mail Wagon, \$905; Stake, \$885.
Vim Motor Truck Co., Philadelphia.



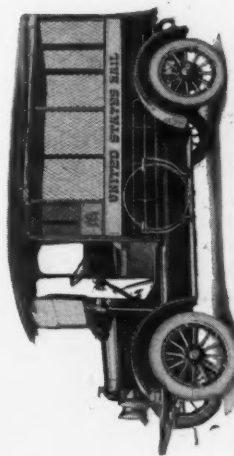
Vim Model S, 1000-lb. Stake, \$885.
Also Closed Panel, \$845; Open Express, \$815;
Cab Top Express, \$815; U. S. Mail Wagon, \$905.
Vim Motor Truck Co., Philadelphia.



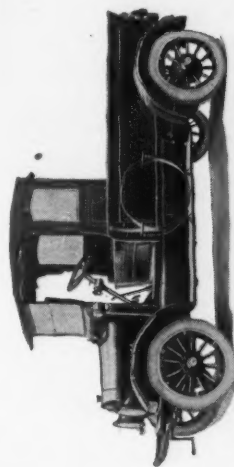
Rainier Model R-1, 1000-lb. Panel, \$1130.
Also Panel, \$1115; Open Flareboard, \$1155; Cov-
ered Flareboard, \$1110.
Rainier Motor Corp., Flushing, N. Y.



Vim Model D, 1000-lb. Closed Panel, \$845.
Also Open Express, \$815; Cab Top Express,
Closed Panel, \$845; Open Express, \$815;
Vim Motor Truck Co., Philadelphia.



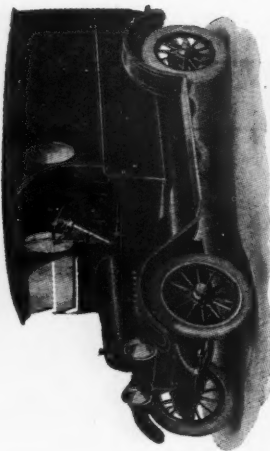
Vim Model M, 1000-lb. U. S. Mail Wagon, \$905.
Also Closed Panel, \$845; Open Express, \$815;
Cab Top Express, \$815; Stake, \$885.
Vim Motor Truck Co., Philadelphia.



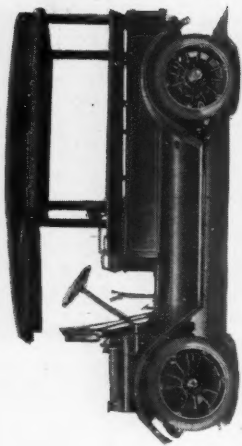
Vim Model H, 1000-lb. Cab Top Express, \$815.
Also Closed Panel, \$845; Open Express, \$815;
U. S. Mail Wagon, \$905; Stake, \$885.
Vim Motor Truck Co., Philadelphia.

1000 Pound Gasoline Commercial Cars

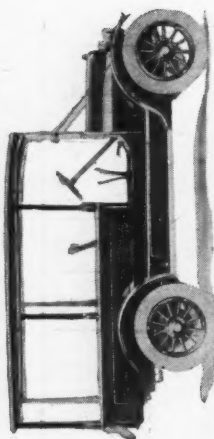
Name and Model Number c. c.	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Size of Piston Rings	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pt. Cent of Weight on Rear Wheels
Bell B	2400	750	GB&S	3 1/2 x 4 1/2	22.5	4	3	1 1/2	L	T	H	Zen	At-Kt	Dyn	FS	D	B	Selec	3	Flot	4.8-1	114	32x3 1/2	32x4	...	80
Champion	1600	775	Lyco	3 1/2 x 4 1/2	15.7	4	3	1 1/2	L	L	H	John	Dix	...	Sp	D	B	Selec	3	1/2 Flot	5.8-1	108	31x4	31x4	...	80
Norwalk	2200	995	Lyco	3 1/2 x 4 1/2	19.6	4	3	1 1/2	L	L	C	Cart	Dele	Dyn	Sp	D	B	Selec	3	Flot	4.5-1	108	30x3 1/2	30x3 1/2	...	95
Rainier-R1	1950	895	Lyco	3 1/2 x 5	16.9	4	3	1 1/2	L	L	T	Zen	Spid	...	FS	D	W	Selec	3	Timk	7.3-1	115	33x4	33x4	...	75
Rush F	1835	765	Own	3 1/2 x 4 1/2	14.4	4	3	1 1/2	L	L	T	Cart	Conn	Spid	FS	D	B	G-Lee	3	3/4 Flot	4.4-1	105	31x4	31x4	...	61
Vim											T	Zen	Dix	...	FS	C	B	Selec	3	3/4 Flot	5.3-1	108	31x4	31x4	...	



Bell Special, 1200-lb. Panel, \$1095.
Also Stake, \$1000; Open Flareboard, \$1050. Bell Motor Car Co., Inc., York, Pa.



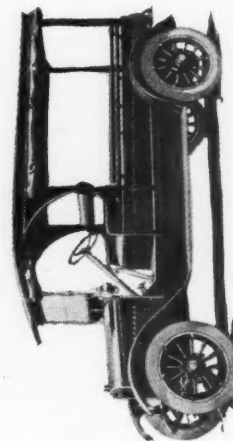
Conestoga C, 1200-lb. Open Express, \$975.
Also Panel, \$990; Farm Body, \$1000; Cabin Top Body, \$970. The Conestoga Motor Truck Co., Lancaster, Pa.



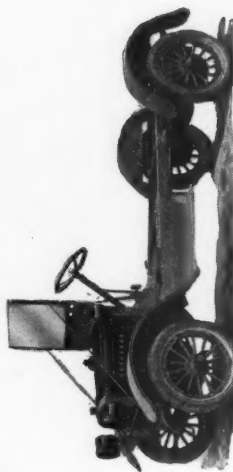
Overland No. 1200, 1200-lb. Express, \$930.
Willys-Overland Co., Toledo, Ohio.

1200 Pound Gasoline Commercial Cars

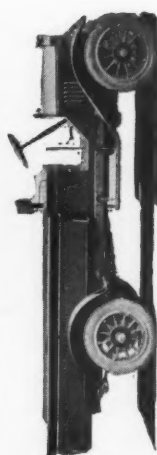
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	P. Cent of Weight on Rear Wheels
Bell Special	2000	850	Cont	3 3/4 x 5	22.5	4	3	L	L	H	Zen	At-Kt	Dyn	FS	D	B	Selec	3	Flot	4.8-1	114	32x3 1/2*	32x4*	....	50
Conestoga	1650	890	LM&F	3 1/4 x 4 1/2	16.9	4	3	L	L	H	Zen	Bij	Bij	FS	D	B	G-Lee	3	3/4 Fl	6-1	108	31x4*	31x4	....	70
Economy	2180	....	GB&S	3 3/4 x 4 1/2	22.5	4	3	L	L	H	Sheb	Will	Dyn	FS	D	B	G-Lee	3	Flot	4.8-1	115	32x4*	32x4*	....	69
Overland	2180	....	Own	4 1/4 x 4 1/2	27.2	4	4	L	L	C	Trill	....	Au-L	Sp	C	B	Selec	3	3/4 Flot	4-1	106	33x4 1/2*	33x4 1/2*	....



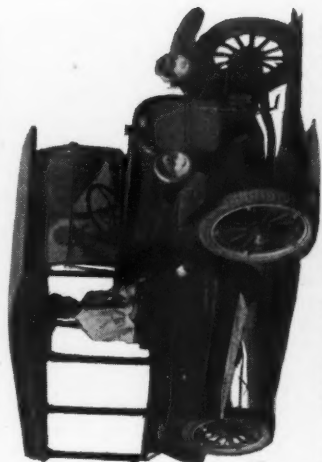
Collier, 1500-lb. Open Express, \$885.
Also Stake, \$885; Panel, \$885; Covered Flareboard, \$885. Collier Motor Truck Co., Bellevue, O.



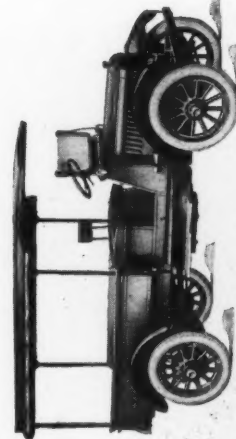
Hoover 15-B, 1500-lb. Chassis, \$1350.
Hoover Wagon Co., York, Pa.



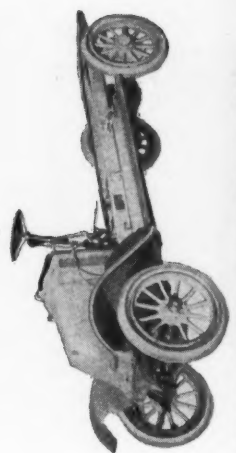
Clydesdale 25, 1500-lb. Flareboard, Chassis, \$1055.
Clyde Cars Co., Clyde, Ohio.



Reya Model A-18, 1500-lb. Flareboard, \$1060.
Also Stake, \$1060; Panel, \$1150. Reya Motor Co., Napoleon, O.



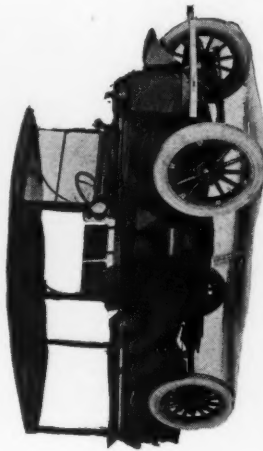
Old Hickory, 1500-lb. Express, Chassis, \$875.
Kentucky Wagon Mfg. Co., Louisville, Ky.



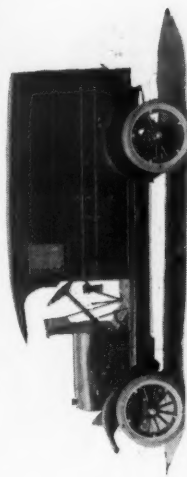
Lippard Stewart 1500-lb. Chassis, \$1900.
Lippard Stewart Motor Car Co., Buffalo, N. Y.



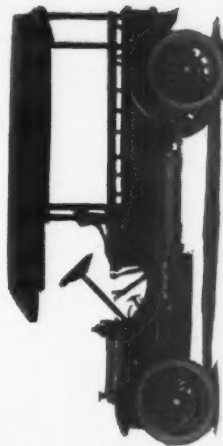
Selden Model G, 1500-lb. Panel, \$1225.
Selden Motor Vehicle Co., Rochester, N. Y.



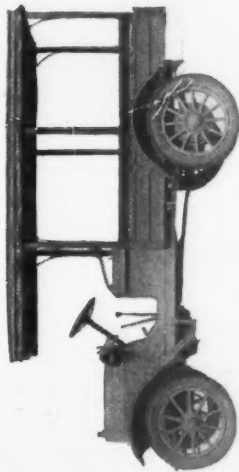
Stewart 6, 1500-lb. Express, Chassis, \$750.
Stewart Motor Corp., Buffalo, N. Y.



Reya Model A-18, 1500-lb. Panel, \$1150.
Also Stake, \$1060; Flareboard, \$1060.
Reya Motor Co., Napoleon, O.



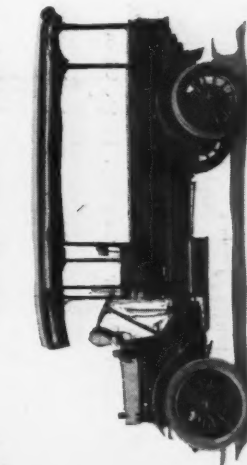
White, 1500-lb. Express Body, \$2500.
The White Co., Cleveland, Ohio.



Tiffin Model A, 1500-lb. Delivery Chassis, \$1190.
Tiffin Wagon Co., Tiffin, Ohio.

1500 Pound Gasoline Commercial Cars

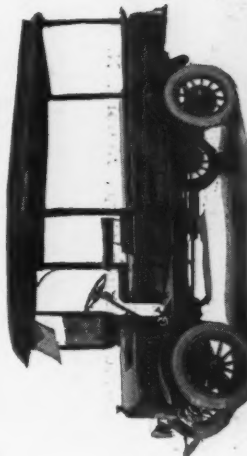
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Size of Piston Rings	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch; C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pr. Cent. of Weight on Rear Wheels
Clydesdale 25	2500	1055	Lyco	3 1/2 x 5	19.6	4	3	3 1/2	T T T T T	C L L L L	T	Can	Mag Conn	Aut-L	Sp FS	C	W	Selec	4	% Flot	6-1	124	34x4 1/2	34x4 1/2	Own	90
Collier 15	2150	835	Lyco	3 1/2 x 5	16.9	4	3	3 1/2	T T T T T	C L L L L	T	Can	Dix	Aut-L	Sp FS	C	B	Selec	3	Shield	6.5-1	118	32x4	32x4	...	67
Hoover 15-B	2450	1350	Cont	3 1/2 x 5	16.9	4	3	3 1/2	T T T T T	C L L L L	T	Can	Conn	Dyn	Sp FS	C	W	Selec	3	Flot	6-1	120	32x4	32x4	...	70
Old Hickory	2100	875	Lyco	3 1/2 x 5	22.5	4	3	3 1/2	T T T T T	C L L L L	T	H	Spld	Aut-L	Sp FS	C	B	Selec	3	Flot	6-1	117	31x4	31x4	...	78
Reya-A18	2250	995	GB&S	3 1/2 x 4 1/2	15.6	4	3	3 1/2	T T T T T	C L L L L	T	Bus	Elism	Aut-L	Sp FS	C	W	Selec	3	Shield	6.2-1	110	32x3 1/2	32x4	...	85
Selden G	1900	1075	L-Rol	3 1/2 x 4 1/2	15.6	4	3	3 1/2	T T T T T	C L L L L	T	Bus	Perl	West	Sp FS	C	I	MMCo	3	Cel	6-1	110	32x4	32x4	...	65
Stewart 6	1750	750	L-Rol	3 1/2 x 5	19.6	4	3	3 1/2	T T T T T	C L L L L	T	Bus	Mag	...	Sp FS	C	B	Selec	3	Russ	6.8-1	133	34x4 1/2	34x4 1/2	...	...
Tiffin A	2575	1190	Cont	3 1/2 x 5	19.6	4	3	3 1/2	T T T T T	C L L L L	T	C	Mag	...	Sp FS	C	B	Selec	4	Own	...	...	34x4 1/2	34x4 1/2	...	...
White	2960	2300	Own	3 1/2 x 5 1/2	22.5	4	3	3 1/2	T T T T T	C L L L L	T	C	Mag	...	Sp FS	C	B	Selec	4	Own	...	...	34x4 1/2	34x4 1/2	...	...



Concord Model B, 1-ton Express, Chassis, \$1750.
Abbot & Downing Co., Concord, N. H.



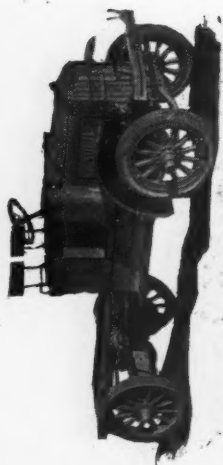
Bessemer G, 1-ton Express Chassis, \$1250.
Bessemer Motor Truck Co., Grove City, Pa.



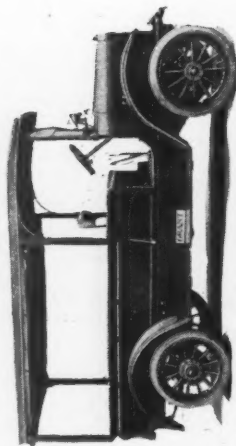
Brinton H, 1-ton Express, Chassis, \$1250.
Brinton Motor Truck Co., Philadelphia, Pa.

1 Ton Gasoline Commercial Cars

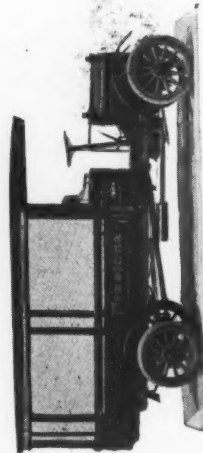
Bessemer G	2850	1250	Cont	3 1/2 x 5	19.6	4	3	3 1/2	T	C	Zen	Dix	...	FS	D	I	Selec	3	Torb	7-1	124	34x3	34x4	...	85
Brinton H	2800	1250	Wis	3 1/2 x 5	16.9	4	2	3 1/2	T	T	Rayf	...	FS	D	W	Selec	3	Flot	6.2-1	125	34x3	34x4	...	75	
Concord B	3200	1750	Buda	3 1/2 x 5 1/2	19.6	4	3	3 1/2	T	T	Zen	West	FS	D	W	Warn	3	1/2 Flot	7-1	130	36x3 1/2	36x5	...	...



Garford Model 75-B, 1-ton Chassis, \$1750.
Garford Motor Truck Co., Lima, Ohio.



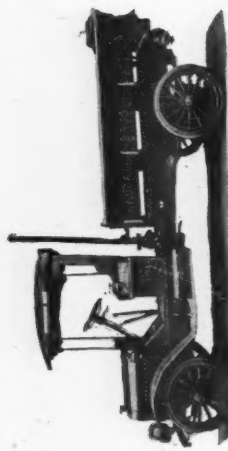
Grant 12, 1-ton Express Body, \$1020.
Also Panel, \$1065. The Grant Motor Car Corp.,
Cleveland, Ohio.



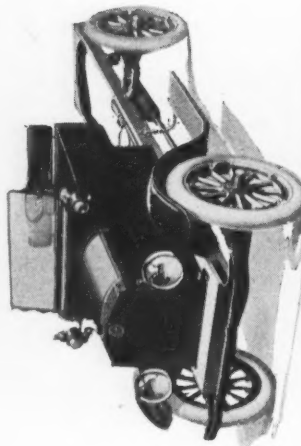
Selden TXL, 1-ton Screen Side Express, \$1800.
Also Covered Flareboard, \$1675.
Selden Motor Vehicle Co., Rochester, N. Y.



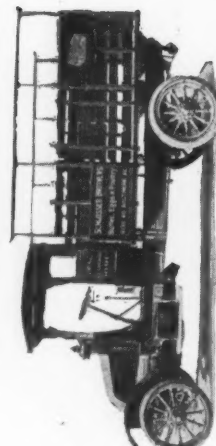
Norwalk 1-ton Chassis, \$1295.
Norwalk Motor Car Co., Martinsburg, W. Va.



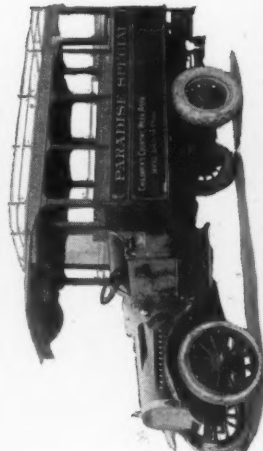
Corbitt E, 1-ton Dump Body, Chassis, \$1650.
Also Stake, \$1750; Open Flareboard, \$1750; Panel,
\$1775; Screen Side Express, \$1800; Covered
Flareboard, \$1800. The Corbitt Motor Truck
Co., Henderson, N. C.



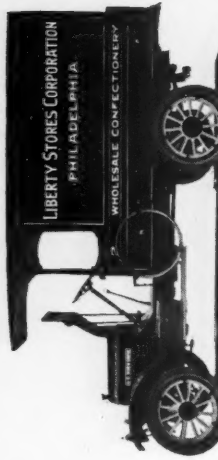
Higrade, A-18, 1-ton Chassis, \$1800.
Higrade Motors Co., Buffalo, N. Y.



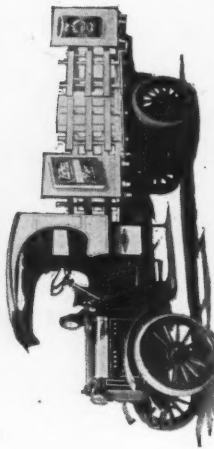
Lippard Stewart H, 1-ton Stake, Chassis, \$2150.
Lippard Stewart Motor Car Co., Buffalo, N. Y.



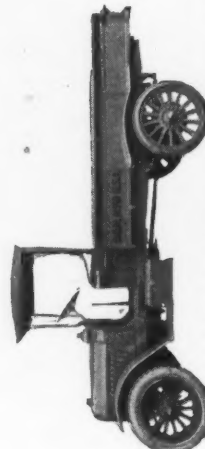
Mack AB, 1-ton Bus, Chassis, \$2400.
International Motor Co., New York City.



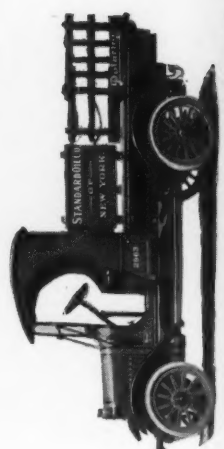
Day-Elder Model J, 1-ton Panel, Chassis, \$950.
Day-Elder Motors Corp., Newark, N. J.



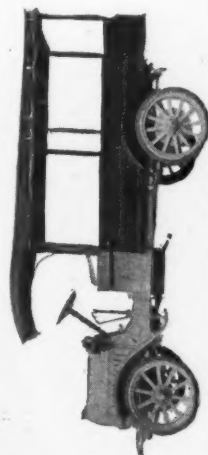
Larrabee-Deyo O, 1-ton Stake Chassis, \$1800.
The Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.



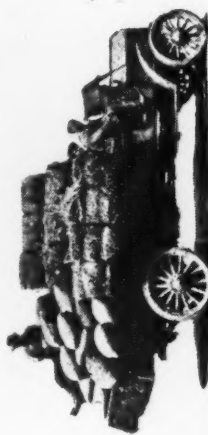
Superior Model A, 1-ton Open Flareboard
Chassis, \$1500.
Superior Motor Truck Co., Atlanta, Ga.



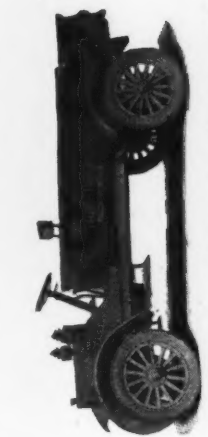
Stewart Model 8, 1-ton Stake Chassis, \$1295.
Stewart Motor Corp., Buffalo, N. Y.



Tiffin Model AW, 1-ton Express Chassis, \$1550.
Tiffin Wagon Co., Tiffin, Ohio.



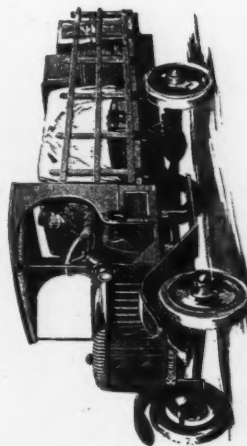
Trabold TJ, 1-ton Flareboard Chassis, \$1200.
Trabold Truck Co., Johnstown, Pa.



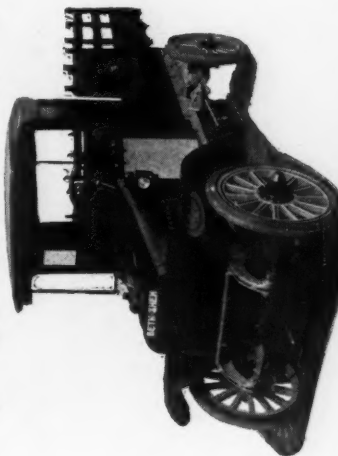
Trojan 26, 1-ton Flareboard Chassis, \$1500.
Commercial Truck Co., Cleveland, Ohio.

1 Ton Gasoline Commercial Cars

Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	P.C. Cent of Weight on Rear Wheels
Corbitt E	3050	1650	Cont	3 1/2 x 5	22.5	4	3	1	T	H	Strm	Elism	G&D	Sp	D	W	Selec	3	1/2 Flot	6.5-1	130	34x3 1/2	34x4	Pier	80
D-E Model J	2000	950	L-Roi	3 1/2 x 4 1/2	15.6	4	3	1	T	T	Rayf	Berl	Al-Ch	Sp	D	W	Selec	3	Shield	6.2-1	108	34x4	34x4	Mon	73
Garford 75-B	2450	1750	Buda	3 1/2 x 5	19.6	4	3	1	T	T	Cart	Dix	...	FS	D	W	B-Lipe	3	Timk	7.8-1	128	34x4 1/2	34x4	...	...
Grant 12	2700	1800	Cont	3 1/2 x 5	16.9	4	3	1	T	Fed	Zen	Simm	L-N	FS	D	I	G-Lee	2	...	5.3-1	115	32x4	32x4	...	...
Higgrade A-18	3400	1800	Cont	3 1/2 x 5	22.5	4	3	1	T	Bus	Sheb	Bosh	Dyn	FS	D	W	Full	2	Shield	4.5-1	115	35x5	35x5	...	66
Lar'ee-Deyo M	3500	2150	Cont	3 1/2 x 5 1/4	22.5	4	3	1	T	Bus	Zen	Elism	Dyn	FS	D	W	B-Lipe	3	Shield	6.5-1	140	34x3 1/2	34x5	Pier	75
Lipp-Stew. H	3500	2150	Cont	3 1/2 x 5 1/4	22.5	4	3	1	T	H	Strm	Elism	Dyn	FS	D	W	B-Lipe	3	1/2 Flot	6.8-1	145	36x3	36x5	Pier	70
Mack	4350	2400	Ow	4 x 5	25.6	4	3	1	T	C	Cart	Dix	Dyn	FS	D	W	Selec	4	Opt	...	130	36x3 1/2	36x3 1/2	Own	95
Norwalk	2500	1295	Lyc	3 1/2 x 5	19.6	4	3	1	T	Bus	Strm	Bosh	Dyn	FS	D	W	Selec	3	Flot	7-1	130	34x4	34x4	...	95
Selden T-XL	3000	1500	Cont	3 1/2 x 5	19.6	4	3	1	T	Bus	Strm	Bosh	NE	FS	D	I	Covt	3	Russ	8.2-1	140	34x4	34x4	Pier	71
Superior A	2820	1295	Cont	3 1/2 x 5	19.6	4	3	1	T	Bus	Strm	Bosh	West	FS	D	I	Full	3	Torb	7-1	124	34x4 1/2	34x4	Mon	85
Stewart 8	3200	1200	Cont	3 1/2 x 5 1/4	19.6	4	3	1	T	C	Strm	Berl	...	FS	D	I	Durst	3	Cel	8-1	126	36x3	36x4	...	80
Trabold TJ	3040	1550	Cont	3 1/2 x 5	19.6	4	3	1	T	L	Sheb	Mag	...	FS	D	W	Selec	3	Shield	6.5-1	112	36x3 1/2	36x4	Pier	65
Tiffin AW	2900	1500	Somr	3 1/2 x 5	18.2	4	3	1	T	...	Strm	Bosh	...	FS	D	W	G-Lee	3	Shield	...	120	36x3 1/2	36x3 1/2	...	...



Koehler Model K, 1 1/4-ton Stake, \$1215.
Also Open Flareboard, \$1200; Covered Flareboard, \$1250. The H. J. Koehler Motors Corp., Newark, N. J.



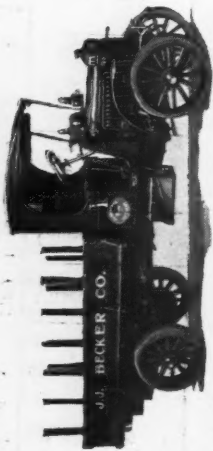
Bethlehem Model A, 1 1/4-ton Stake, \$1285.
Also Open Flareboard, \$1285.
Bethlehem Motors Corp., Allentown, Pa.



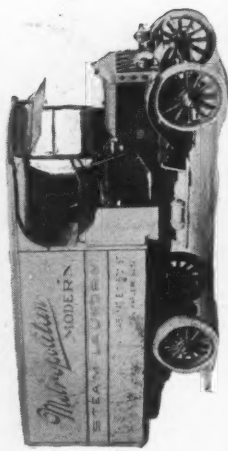
Rainier R-4, 1 1/4-ton Chassis, \$1350.
Rainier Motor Corp., Flushing, N. Y.

1 1/4 Ton Gasoline Commercial Cars

Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	P.C. Cent of Weight on Rear Wheels
Bethlehem A	2700	1245	GB&S	3 1/2 x 4 1/4	22.5	4	3	1	T	H	Sheb	Berl	...	Sp	D	I	Selec	3	Flot	7.4-1	126	34x3	34x4	Pier	80
Koehler R-4	2800	1350	LM&F	3 1/2 x 4 1/4	16.9	4	3	1	T	Har	Zen	Dix	...	FS	D	W	B-Lipe	3	1/2 Flot	8.3-1	125	34x3	34x4	...	70
Rainier R-4	2800	1350	LM&F	3 1/2 x 4 1/4	16.9	4	3	1	T	Har	Zen	Dix	...	FS	D	W	B-Lipe	3	1/2 Flot	8.3-1	125	34x3	34x4	...	80



Atterbury Model 7R, 1 1/2-ton Stake, \$2450.
Also Open Flareboard, \$2475; Screen Side Express, \$2625; Covered Flareboard, \$2575.
Atterbury Motor Car Co., Buffalo, N. Y.



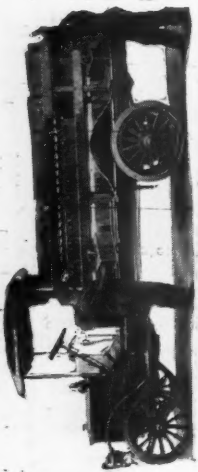
Clydesdale 45, 1 1/2-ton Panel Chassis, \$2275.
Clyde Cars Co., Clyde, Ohio.



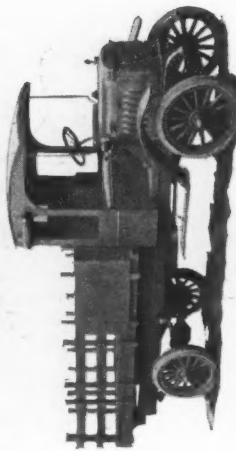
Kelly-Springfield K-31, 1 1/2-ton Chassis, \$2500.
Kelly-Springfield Motor Truck Co., Springfield, Ohio.



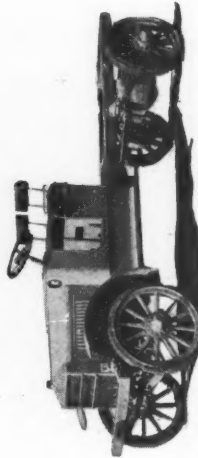
Gramm-Bernstein W, 1 1/2-ton Special Body.
Gramm-Bernstein Motor Truck Co., Lima, Ohio.



Corbitt D, 1 1/2-ton Express, Chassis, \$1850.
Also Stake, \$1950; Open Flareboard, \$1950; Panel, \$1950; Screen Side Express, \$2000; Covered Flareboard, \$2000.
Corbitt Motor Truck Co., Henderson, N. C.



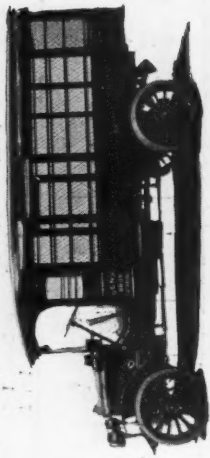
Defiance, 1 1/2-ton Stake, Chassis, \$1595.
Turnbull Wagon Co., Defiance, Ohio.



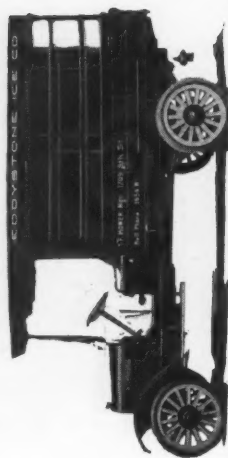
Garford Model 66-B, 1 1/2-ton Chassis, \$2100.
Garford Motor Truck Co., Lima, Ohio.



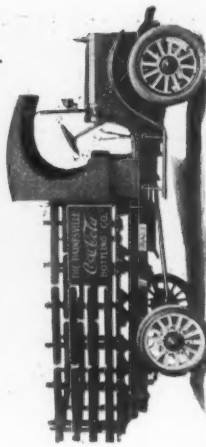
Fulton Model FX, 1 1/2-ton Chassis, \$1420.
Fulton Motor Truck Co., Farmingdale, L. I.



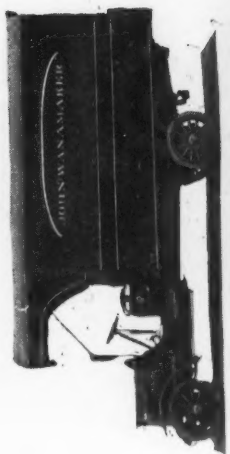
The Brockway Model J3, 1 1/2-ton Screen Side Express, \$2450.
Also Stake, \$2175; Open Flareboard, \$2140; Panel, \$2290; Covered Flareboard, \$2240.
Brockway Motor Truck Co., Cortland, N. Y.



Day-Elder Model A, 1 1/2-ton Covered Flareboard, Chassis, \$1495.
Day-Elder Motors Corp., Newark, N. J.



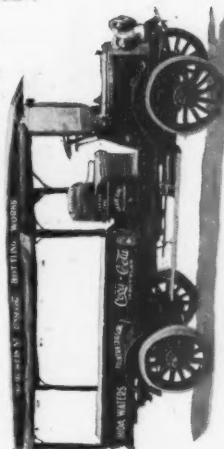
Grant 10, 1 1/2-ton Stake, Chassis, \$1490.
Grant Motor Car Corp., Cleveland, Ohio.



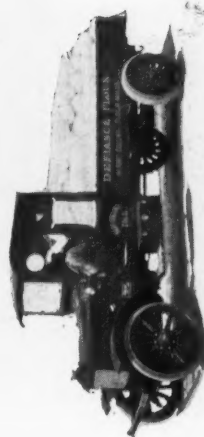
Hurlburt Model 1, 1 1/2-ton Panel, Chassis, \$2350.
Hurlburt Motor Truck Co., New York City.



Mack AB, 1 1/2-ton Panel, Chassis, \$3800.
International Motor Co., New York City.



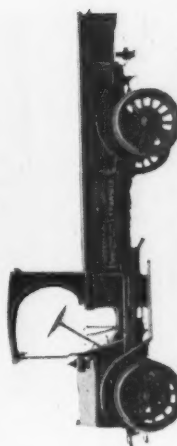
Maccar Model L, 1 1/2-ton Chassis, \$2400.
Maccar Truck Co., Scranton, Pa.



Stewart Model 9, 1 1/2-ton Open Flareboard,
Chassis, \$1695.
Stewart Motor Corp., Buffalo, N. Y.



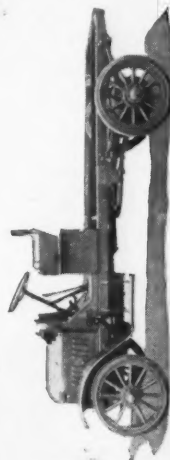
Lippard-Stewart F, 1 1/2-ton Chassis, \$2550.
Lippard-Stewart Motor Car Co., Buffalo, N. Y.



Tiffin Model GW, 1 1/2-ton Open Flareboard,
Chassis, \$1970.
Tiffin Wagon Co., Tiffin, Ohio.



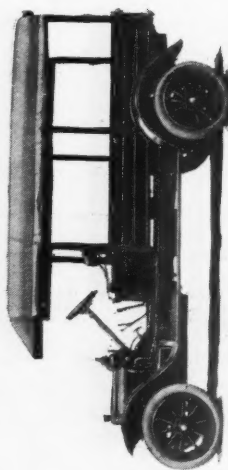
Vim Motor Truck Co., Philadelphia.
Vim Motor Truck Co., Philadelphia.



White Hickory Model H, 1 1/2-ton Chassis, \$2200.
White Hickory Wagon Mfg. Co., Atlanta, Ga.

1 1/2 Ton Gasoline Commercial Cars

Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Manufacturer	Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	P. Cent of Weight on Rear Wheels
Atterbury 7R	4770	2275	Cont	4 1/2 x 5 1/4	27.2	4	4	L	C	Bus	Zen	Elism	...	FS	C	W	B-Lipe	4	Timk	8.5-1	140 1/2	36x3 1/2	36x5	C	71
Brookway J3	4200	2450	Cont	3 3/4 x 5 1/4	22.5	4	3	L	C	T	Sheb	Elism	...	FS	W	W	B-Lipe	3	Shield	8.7-1	140	36x3 1/2	36x5	Own	70
Clydesdale 45	4300	2275	...	4 1/2 x 5 1/4	22.5	4	3	L	C	T	...	Mag	...	FS	W	W	Selec	3	Flot	8.8-1	146	36x3 1/2	36x5	Pier	69
D-E Model A	3890	1850	Cont	3 3/4 x 5	22.5	4	3	L	C	T	Strm	Elism	G&D	FS	W	W	Selec	3	Hay	7.8-1	128	34x3 1/2	34x4	Mon	...
Defiance	3500	1495	Allen	3 3/4 x 5	19.6	4	3	L	C	T	Zen	Elism	...	FS	W	W	Selec	3	Torb	8.1	135	34x3 1/2	34x5	...	...
Fulton FX	3140	1595	H-Sp	3 1/4 x 5	22.5	4	3	L	C	H	Strm	Elism	...	FS	W	I	Selec	3	...	8.2-1	136	34x3 1/2	34x5	Mon	...
Garford 66-B	3140	1420	Buda	3 3/4 x 5 1/2	16.9	4	3	L	C	H	Rayf	Spid	...	FS	W	W	Selec	3	Timk	8.5-1	142	36x3 1/2	36x5	...	...
Gramm-Bernstein	4490	2100	Wauk	3 3/4 x 5 1/4	22.5	4	3	L	C	T	Zen	Dix	...	FS	W	W	B-Lipe	3	Flot	7.8-1	130	34x3 1/2	34x4	Pier	93
Grant 10	3050	1490	...	3 3/4 x 5	22.5	4	3	L	C	T	Stew	Elism	...	FS	W	I	G-Lee	3	...	7-1	124	34x4 1/2	34x4	...	85
Hurlbert 1	4300	2300	Buda	3 3/4 x 5 1/2	22.5	4	3	L	C	H	Fich	Elism	...	FS	W	W	B-Lipe	3	Own	6.3-1	144	36x3 1/2	36x5D	...	89
Kelly-Spd K-31	4590	2500	Own	3 3/4 x 5 1/4	22.5	4	3	L	C	Fed	Zen	Elism	...	FS	W	W	Covt	3	Dead	8.4-1	144	36x3 1/2	36x6	Own	89
Kelly-Spd K-32	4685	2500	Own	3 3/4 x 5 1/4	22.5	4	3	L	C	Fed	Zen	Elism	Opt	FS	W	W	Covt	3	Flot	8.5-1	144	36x3 1/2	36x6	Own	89
Lipp-Stew. F	4600	2550	Cont	4 1/2 x 5 1/4	27.2	4	3	L	C	T	Zen	Elism	Dyn	FS	W	W	B-Lipe	3	Flot	7.8-1	150	36x3 1/2	36x5	Pier	70
Maccar L	4050	2400	Cont	4 1/2 x 5 1/4	27.2	4	3	L	C	T	Strm	Bosh	...	FS	W	W	Selec	4	Timk	6.8-1	140	36x3 1/2	36x5	Own	65
Mack	4900	2800	Own	4 1/2 x 5 1/4	36.6	4	3	L	C	H	Strm	Dix	West	FS	W	W	Selec	3	Opt	7-1	140	36x3 1/2	36x5	...	85
Stewart 9	3200	1695	Cont	3 3/4 x 5	22.5	4	3	L	C	T	Zen	Elism	...	FS	W	W	Selec	3	Timk	8.5-1	129	36x3 1/2	36x5	...	68
Sullivan F	3500	2150	Buda	3 3/4 x 5 1/2	22.5	4	3	L	C	T	Holl	Bosh	...	FS	W	W	Covt	3	Shield	8.6-1	135	36x3 1/2	36x5	Pier	65
Tiffin GW	3150	1970	Cont	3 3/4 x 5 1/4	22.5	4	3	L	C	T	Sheb	Mag	...	FS	W	W	Selec	3	Flot	6.5-1	142	36x3 1/2	36x5	...	65
Vim 22	4300	2750	Own	3 3/4 x 5 1/2	22.5	4	3	L	C	T	Zen	Dix	...	FS	W	W	Selec	4	Timk	8.5-1	144	36x3 1/2	36x5	Pier	65
White Hick.	3575	2200	Cont	3 3/4 x 5	22.5	4	3	L	C	T	Strm	Elism	...	FS	W	W	Full	3	Timk	...	...	36x3 1/2	36x5	Pier	60



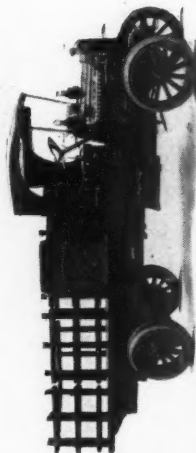
White Standard 1 1/2-ton Express, \$3550.
Also Platform, \$3500. White Co., Cleveland, Ohio.
land, Ohio.



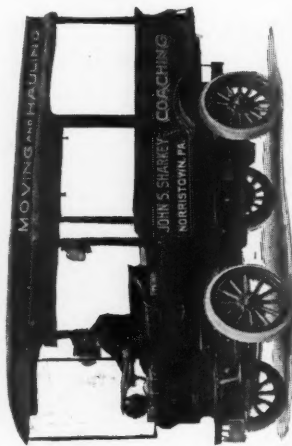
Conestoga, 1 1/2-ton Chassis, \$1450.
Conestoga Motor Truck Co., Lancaster, Pa.

1 1/2 Ton Gasoline Commercial Cars

Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	P. Cent of Weight on Rear Wheels
Conestoga White	4150	1450 3300	Lyco Own	3 1/2 x 5 3/4 3 1/4 x 5 1/4	19.6 22.5	4 4	3 3	L T	D T	H C	Cart Own	Dyn Mag	Dyn	Fo FS	Clutch: C, Cone; D, Disk; B, Band	W B	M/MC Co Sele	3 4	F/lot Own	6-1	130 157	34x4 Opt	34x4 Opt	.....	75



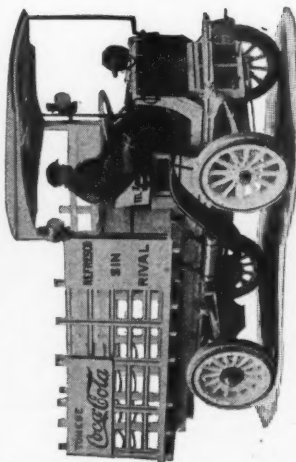
Atterbury Model 7C, 2-ton Stake, \$2912.
Also Open Flareboard, \$2921; Screen Side Express, \$3083; Covered Flareboard, \$3093.
Atterbury Motor Car Co., Buffalo, N. Y.



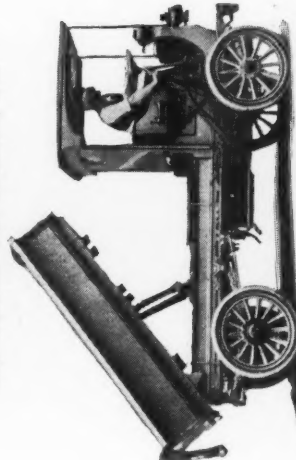
Autocar, 2-ton Covered Flareboard, \$2015.
Also Stake, \$2065; Panel, \$2065; Power Dump; Screen Side Express, \$2125; Coal Body with Power Lift Attachment, Panel, \$2065.
The Autocar Co., Ardmore, Pa.



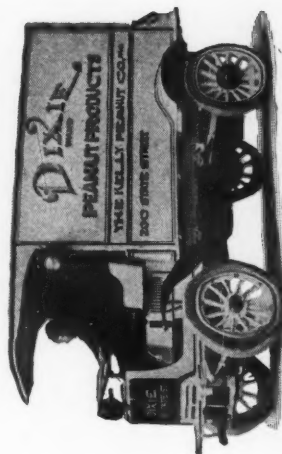
Armleder HW, 2-ton Panel, Chassis, \$2750.
Armleder Co., Cincinnati, Ohio.



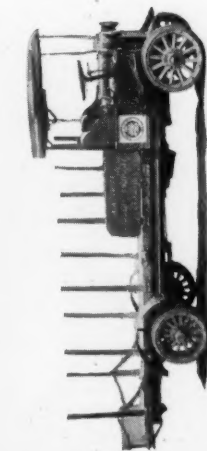
Autocar, 2-ton Stake, \$2065.
Also Covered Flareboard, \$2015; Panel, \$2065; Power Dump; Screen Side Express, \$2125; Coal Body with Power Lift Attachment.
The Autocar Co., Ardmore, Pa.



Autocar, 2-ton Power Dump, Chassis, \$1815.
Also Stake, \$2065; Covered Flareboard, \$2015; Screen Side Express, \$2125; Coal Body with Power Lift Attachment, Panel, \$2065.
The Autocar Co., Ardmore, Pa.



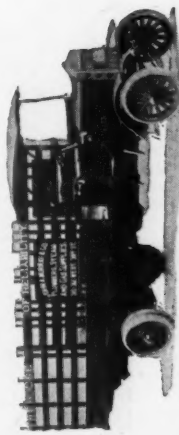
Autocar, 2-ton Panel Model, \$2065.
Also Stake, \$2065; Covered Flareboard, \$2015; Power Dump; Screen Side Express, \$2125; Coal Body with Power Lift Attachment.
The Autocar Co., Ardmore, Pa.



Blair C, 2-ton Stake, Chassis, \$2850.
Blair Motor Truck Co., Newark, Ohio.



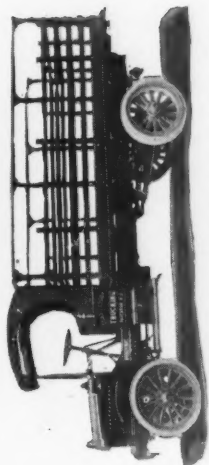
Bourne Magnetic, Model VM, 2-ton Tank Body,
Chassis, \$3500.
Bourne Magnetic Truck Co., Philadelphia, Pa.



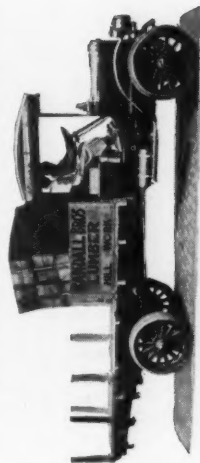
Clydesdale Model 65, 2-ton Stake, Chassis, \$2725.
Clyde Cars Co., Clyde, O.



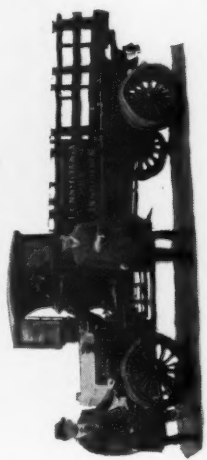
Autocar 2-ton Coal Body with Power Lift
Attachment, Chassis, \$1815.
Also Stake, \$2065; Covered Flareboard, \$2015;
Panel, \$2065; Power Dump; Screen Side Ex-
press, \$2125. The Autocar Co., Ardmore, Pa.



Brockway Model K3, 2-ton Stake, \$2590.
Also Open Flareboard, \$2558; Panel, \$2708;
Screen Side Express, \$2728; Covered Flareboard,
\$2688.
Brockway Motor Truck Co., Cortland, N. Y.



Corbitt Model C, 2-ton Stake, \$2750.
Also Open Flareboard, \$2750; Panel, \$2775;
Screen Side Express, \$2825; Covered Flareboard,
\$2825.
Corbitt Motor Truck Co., Henderson, N. C.



Bessemer Model D, 2-ton Stake Chassis, \$2550.
Bessemer Motor Truck Co., Grove City, Pa.



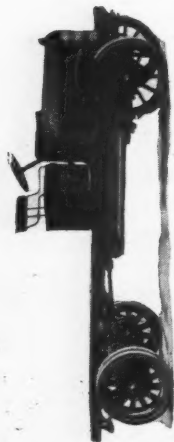
Brockway K3, 2-ton Open Flareboard, \$2558.
Also Stake, \$2590; Screen Side Express, \$2728;
Covered Flareboard, \$2668.
Brockway Motor Truck Co., Cortland, N. Y.



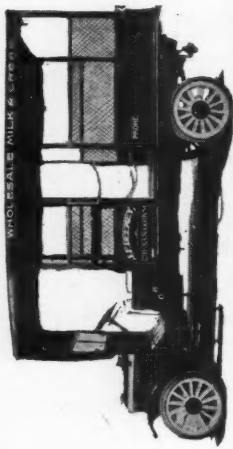
Concord Model A, 2-ton Special Body, \$2400.
Abbott & Downing Co., Concord, N. H.

2 Ton Gasoline Commercial Cars

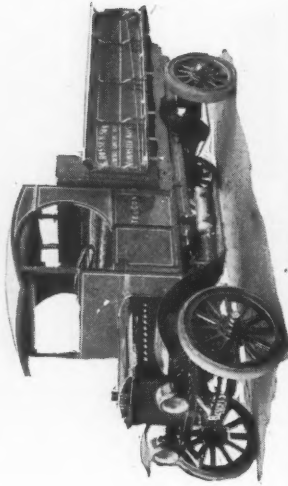
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pt. Cent of Weight on Rear Wheels
4	3	2675	L C	Armlader	HW	4600	2750	Cont	Cont	T	Sheb	Bosh	....	FS	D	W	Selec	3	Timk	8.5-1	148	36x4	36x7	Pier	70
4 1/2 x 5 1/4	5260	2675	Cont	4 1/2 x 5 1/4	27.2	4	4	C	C	T	Zen	Eism	....	FS	D	W	B-Libe	4	Timk	8.5-1	153 1/2	36x4	36x4D	C	72
Atterbury 7C	3300	1815	Own	4 1/2 x 4 1/4	18.1	4	4	T	T	T	Strm	Bosh	....	FS	D	B	Prog	3	Own	7.1-1	97	34x4	34x4	....	79
Autocar 21F	4300	2550	Cont	4 1/2 x 5 1/4	27.2	4	4	T	T	C	Rayf	Dix	....	FS	D	W	Selec	3	Timk	7.8-1	Opt	36x4	36x4D	Pier	80
Bessemer D	5300	2550	Wauk	4 1/2 x 5 3/4	28.9	4	4	L	L	C	Zen	Eism	....	FS	C	W	Cott	3	Flot	7.7-1	Opt	34x4	34x3 1/2 D	....	81
Blair C	5300	2550	Cont	4 1/2 x 5 1/4	28.9	4	4	L	L	C	Zen	Eism	Entz	FS	C	W	Entz	3	Timk	7.7-1	150	36x4	36x4 1/2 D	....	82
Bourne, Mag. VM	5750	3500	Herc	4 1/2 x 5 1/4	25.6	4	4	L	L	C	Zen	Eism	....	FS	C	W	Selec	3	Timk	8.5-1	148	36x4	36x7	Simp	83
Brockway K3	4800	2850	Cont	4 1/2 x 5 1/4	27.2	4	4	L	L	C	Sheb	Eism	....	FS	C	W	Selec	4	Flot	8.5-1	189	36x4	Opt	Non	84
Clydesdale 65	4900	2725	....	4 1/2 x 5 1/4	27.2	4	4	L	L	C	....	Mag	....	Sp	D	W	Selec	3	Flot	8.5-1	145	36x4	Opt	Own	85
Concord A	4400	2400	Buda	4 1/2 x 5 1/4	28.9	4	4	L	L	C	Zen	Eism	West	Sp	D	W	Warn	3	Flot	8.5-1	148	36x4	36x4D	Pier	86
Corbitt C	4850	2650	Cont	4 1/2 x 5 1/4	27.2	4	4	L	L	C	Strm	Eism	G&D	Sp	D	W	Selec	3	1/2 Flot	8.8-1	148	36x7	36x7	Pier	87



Garford Model 70-B, 2-ton Chassis, \$2600.
Garford Motor Truck Co., Lima, Ohio.



Day-Elder Model B, 2-ton Special Screen Side Express, Chassis, \$1755.
Day-Elder Motors Corp., Newark, N. J.



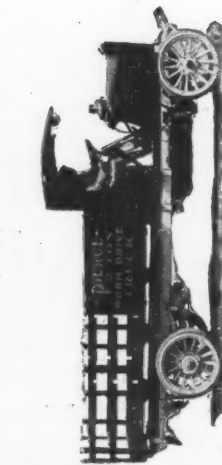
Netco Model D, 2-ton Flareboard, Chassis, \$3000.
New England Truck Co., Fitchburg, Mass.



Hurlburt Model 2, 2-ton Panel Chassis, \$3300.
Hurlburt Motor Truck Co., New York City.



Lippard-Stewart Model G, 2-ton Chassis, \$2850.
Lippard-Stewart Motor Car Co., Buffalo, N. Y.



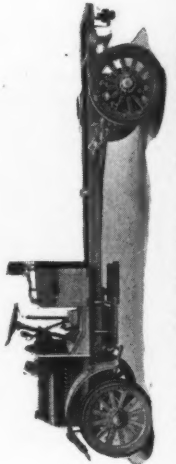
Pierce-Arrow, 2-ton Stake, \$3900.
Also Panel, \$4175; Screen Side Express, \$4250;
Delivery Van, \$4500; Open Box with Top, \$4100;
Ice Delivery, \$4075; Steel Dump, \$4350.
Pierce-Arrow Motor Car Co., Buffalo, N. Y.



Schacht, 2-ton Panel, Chassis, \$2950.
G. A. Schacht Motor Truck Co., Cincinnati, O.



Selden Model JC, 1-ton Chassis, \$2350.
Selden Motor Vehicle Co., Rochester, N. Y.



Selden Model JWL, 2-ton Chassis, \$2550.
Selden Motor Vehicle Co., Rochester, N. Y.



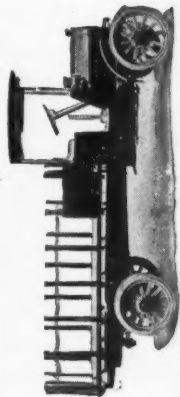
Stewart Model 7, 2-ton Chassis, \$2195.
Stewart Motor Corp., Buffalo, N. Y.



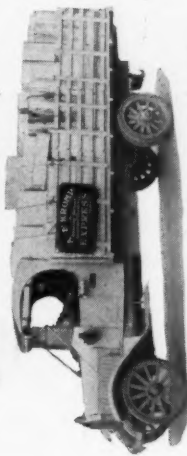
Witt-Will Model W. D. 18, 2-ton Coal Body,
Chassis, \$2500.
Witt-Will Co., Inc., Washington, D. C.



Superior Model C, 2-ton Open Flareboard, \$2000.
Superior Motor Truck Co., Atlanta, Ga.



Sullivan Model E, 2-ton Stake, Chassis, \$2600.
Sullivan Motor Truck Corp., Rochester, N. Y.



Mack AB, 2-ton Stake, Chassis, \$3000.
International Motor Co., New York City.

2 Ton Gasoline Commercial Cars

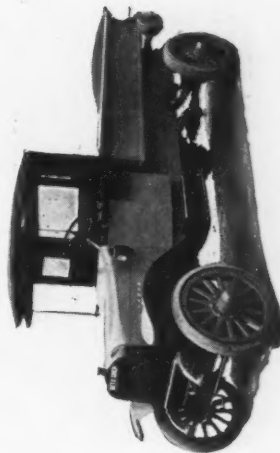
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pr. Cent of Weight on Rear Wheels
D-E Model B	3300	1755	Cont	3 3/4 x 5	22.5	4	3	L L L L	L	T	Zen	Berl	...	FS	D	W	Selec	3	Hay	8.3-1	144	34x3 1/2	34x5	Pier	70
Garford 70-B	4530	2600	Buda	4 1/4 x 5 1/2	28.9	4	3	L L L L	L	T	Rayf	Bosh	...	FS	D	W	B-Lipe	3	Timk	8.5-1	142	36x4	36x4 D	Mon	85
Grant 15	3400	1790	...	3 3/4 x 5	22.5	4	3	L L L L	L	T	Stew	Dix	Bij	FS	D	I	G-Lipe	3	...	9-1	124	34x4 1/2	34x5	Pier	85
Hurlbert 2	5600	3300	Buda	4 1/4 x 5 1/2	28.9	4	3	L L L L	L	T	F'ch	Elism	...	Sp	D	W	Selec	3	Own	8.7-1	Opt	36x4	36x4 D	Pier	70
Lippard-Stew.	4850	2850	Cont	4 1/4 x 5 1/4	27.2	4	3	L L L L	L	T	Zen	Elism	Dyn	FS	D	W	B-Lipe	3	Flot	9.3-1	Opt	36x4	36x4 D	Pier	85
Mack	5000	3000	Cont	4 x 5	25.6	4	3	L L L L	L	T	Strm	Dix	...	FS	D	W	Selec	4	Opt	9.3-1	Opt	36x4	36x4 D	Own	70
Netco-D	5380	3000	Cont	4 1/4 x 5 1/4	27.2	4	3	L L L L	L	T	Zen	Elism	...	Sp	D	W	Selec	3	Flot	9.3-1	144	36x4	36x4 D	Own	85
Pierce-Arrow	...	3750	Own	4 x 5 1/2	25.6	4	4	L L L L	L	T	Opt	Mag	...	FS	D	W	Selec	4	Flot	7-1	150	36x4	36x4 D	Own	70
Rowe	...	3750	Own	4 x 5 1/2	25.6	4	4	L L L L	L	T	Opt	Mag	...	FS	D	W	Selec	4	Flot	7-1	150	36x4	36x4 D	Own	70
G. A. Schacht	4670	2350	Buda	4 1/4 x 5 1/2	28.9	4	3	L L L L	A	C	Sheb	Bosh	...	FS	D	W	Selec	3	Flot	7.8-1	138	36x3 1/2	36x3 1/2 D	...	80
Selden JC	4000	2550	Cont	4 1/4 x 5 1/4	27.2	4	3	L L L L	C	T	Strm	Bosh	...	FS	D	W	Selec	3	Timk	9.3-1	Opt	36x4	36x6	Pier	80
Stewart 7	4200	2195	Cont	4 1/4 x 5 1/4	27.2	4	3	L L L L	C	T	Strm	Bosh	...	FS	D	W	Selec	3	Timk	9.3-1	Opt	36x4	36x6	Pier	85
Sullivan E	4460	2195	Cont	4 1/4 x 5 1/4	27.2	4	3	L L L L	C	T	Zen	Bosh	West	Sp	D	W	B-Lipe	3	Timk	9-1	150	36x4	36x4 D	Pier	71
Superior C	4500	2000	Own	3 3/4 x 5	22.5	4	3	L L L L	C	T	Strm	Elism	...	FS	D	W	Full	3	Torb	9-1	144	36x4	36x6	Mon	85
Witt-Will WD	4550	2500	Cont	4 1/4 x 5 1/4	27.2	4	3	L L L L	C	T	Zen	Elism	...	FS	D	W	Selec	3	Timk	7.8-1	144	36x3 1/2	36x7	Pier	67

2 1/4 Ton Gasoline Commercial Cars

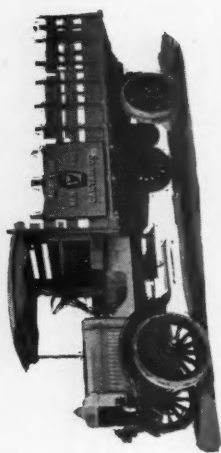
Bethlehem B	3800	1775	NAM	4 x 4 1/2	25.6	4	..	L	T	H	Sheb	Berl	...	Sp	D	I	Selec	3	Flot	8.3-1	144	34x4	34x6	Pier	80
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This is the Eastern Section of the Buyers' Commercial Car Review. [See complete indexes on pages 51-52.]

A section of the February CCJ issue will contain the Western Commercial Car Review.



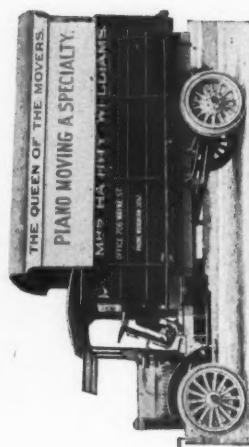
Bethlehem B, 2 1/4-ton Open Flareboard, \$2125.
Bethlehem Motors Corp., Allentown, Pa.



Grammm-Bernstein Model W, 2 1/2-ton Stake.
Grammm-Bernstein Motor Truck Co., Lima, Ohio.



Larrabee-Deyo Model O, 2 1/2-ton Chassis, \$2850.
Larrabee-Deyo Motor Truck Co., Inc.,
Binghamton, N. Y.



Schacht, 2 1/2-ton Panel, Chassis, \$3300.
G. A. Schacht Motor Truck Co.,
Cincinnati, O.



Vim Model 23, 2 1/2-ton Chassis, \$3550.
Vim Motor Truck Co., Philadelphia.



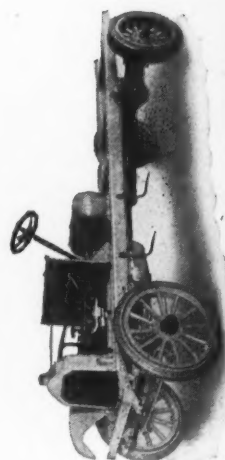
Corbitt Model B, 2 1/2-ton Stake, \$3025.
Also Open Flareboard, \$3025; Panel, \$3025;
Screen Side Express, \$3075; Covered Flareboard,
\$3075. Corbitt Motor Truck Co., Henderson, N. C.



Brinton Model F, 2 1/2-ton Open Express,
Chassis, \$2500.
Brinton Motor Truck Co., Philadelphia, Pa.



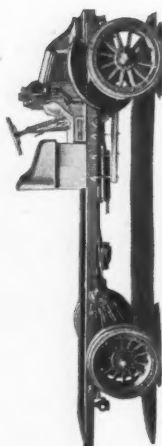
Rowe 2 1/2-ton Chassis, \$3000.
Rowe Motor Mfg. Co., Downingtown, Pa.



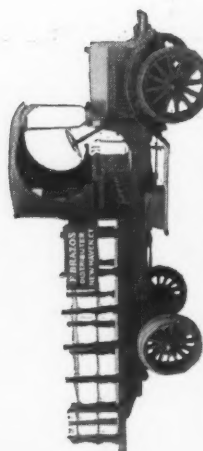
Maccar Model H, 2 1/2-ton Chassis, \$2950.
Maccar Truck Co., Scranton, Pa.



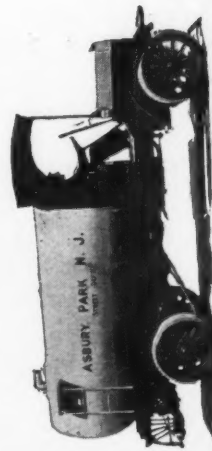
Kelly-Springfield Model K-36, Worm Drive,
Chassis, \$3000.
The Kelly-Springfield Motor Truck Co., Spring-
field, Ohio.



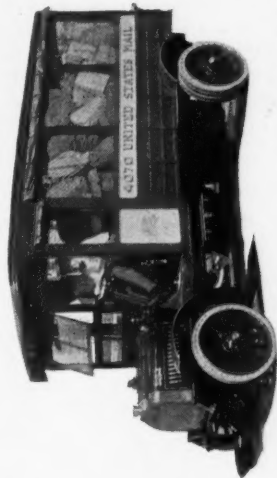
Kelly-Springfield Model K-35, 2 1/2-ton Chain
Drive Chassis, \$3000.
The Kelly-Springfield Motor Truck Co., Spring-
field, Ohio.



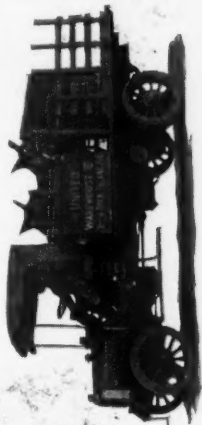
Tiffin Model MW, 2 1/2-ton Stake, Chassis, \$2700.
Tiffin Wagon Co., Tiffin, Ohio.



Tiffin MC, 2 1/2-ton Tank Body, Chassis, \$2500.
Tiffin Wagon Co., Tiffin, Ohio.



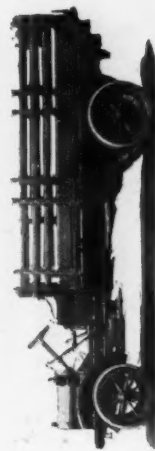
U. S. Model H, 2 1/2-ton Express, Chassis, \$2950.
United States Motor Truck Co., Cincinnati, Ohio.



U. S. Model E, 2 1/2-ton Stake, Chassis, \$2650.
United States Motor Truck Co., Cincinnati, Ohio.

2 1/2 Ton Gasoline Commercial Cars

Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pr. Cent. of Weight on Rear Wheels
a. c.																									
Brinton F	4600	2400	Cont	4 1/4 x 5 1/4	27.2	4	3	T T T T T	C O O O V	T L	Strm	Bosh	G&D	FS	W	W	Selec	3	Flot	7.8-1	140	36x4	36x6	Pier	75
Corbitt B	5000	2900	Wauk	4 1/4 x 5 1/4	27.2	4	3	T T T T T	C O O O V	T L	Strm	Elism	West	FS	W	W	I-C	4	1/2 Flot	8.8-1	148	36x4	36x7	Pier	89
Gram-Bernstein	5110	3000	Own	3 3/4 x 5 1/4	28.5	4	3	T T T T T	C O O O V	Fed	Zen	Elism	Opt	Sp	W	W	Selec	3	1/2 Flot	7.8-1	156	36x4	36x4D	Own	89
Kelly-Spd K36	4600	2700	Cont	4 1/4 x 5 1/4	27.2	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Shld	8.7-1	144	36x4	36x7	Pier	75
La-bee-Deyo O	4600	2950	Cont	4 1/4 x 5 1/4	32.4	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Shld	7.8-1	162	36x4	36x4D	Pier	65
Maccar H	5000	3000	Cont	4 1/4 x 5 1/4	25.6	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Flot	8.7-1	164	36x4	36x4D	Own	70
Rowe	5070	3300	Buda	4 1/4 x 5 1/4	28.9	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Flot	8.7-1	156	36x4	36x4D	Own	65
G. A. Schacht	4920	2500	Cont	4 1/4 x 5 1/4	27.2	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Flot	8.8-1	140	36x4	36x4D	Pier	65
Tiffin MC	4640	2700	Cont	4 1/4 x 5 1/4	27.2	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Flot	8.8-1	140	36x4	36x4D	Pier	80
Tiffin MW	5200	2650	Cont	4 1/4 x 5 1/4	27.2	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Flot	8.8-1	140	36x4	36x4D	Pier	80
U S Model E	5250	2950	Cont	4 1/4 x 5 1/4	27.2	4	3	T T T T T	C O O O V	T L	Strm	Bosh	...	FS	W	W	Selec	3	Flot	8.8-1	140	36x4	36x4D	Pier	80
U S Model H	5600	3550	Own	4 1/4 x 5 1/2	28.9	4	3	T T T T T	C O O O V	T L	Zen	Dix	...	FS	W	W	Selec	4	1/2 Flot	8.7-1	163	36x6	36x4D	...	65
Vim 23																									



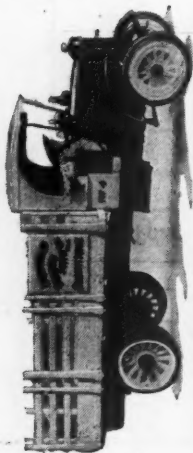
White 3-ton Platform Body, \$4350.
The White Co., Cleveland, Ohio.



The Riker, 3-ton Chassis.
Locomobile Co. of America, Bridgeport, Conn.

3 Ton Gasoline Commercial Cars

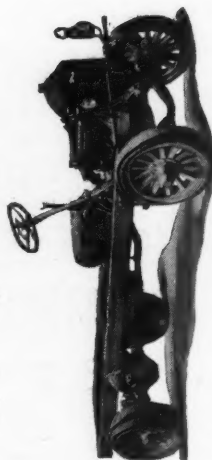
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pr. Cent. of Weight on Rear Wheels
a. c.																									
Blair D	5950	3250	Wauk	4 1/4 x 5 3/4	28.9	4	3	T L T L	P C D	H	Zen	Elism	...	FS	W	W	Cott	3	Flot	8.7-1	Opt	36x5	36x5D	...	75
Riker			Own	4 3/4 x 6	28.9	4	3	T L T L	P C D	C	B&B	Opt	West	FS	C	W	Selec	4	Flot	10-1	Opt	36x5	36x5	Own	53
White	6765	4100	Own	3 3/4 x 5 1/4	22.5	4	3	T L T L	P C D	C	Own	Mag	...	FS	C	C	Selec	4	Own	....	163	36x5	40x5D	...	..



Atterbury Model 7D, 3 1/2-ton Stake, \$3850.
Also Open Flareboard, \$3875; Screen Side Express, \$4050; Covered Flareboard, \$4000.
Atterbury Motor Car Co., Buffalo, N. Y.



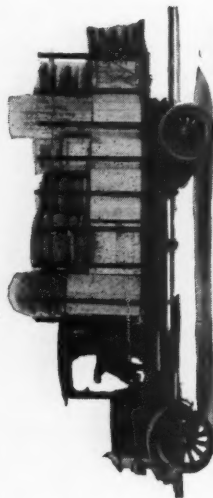
Clydesdale Model 90, 3 1/2-ton Chassis, \$3600.
Clyde Cars Co., Clyde, Ohio.



Sanford Model W-35, 3 1/2-ton Chassis.
Sanford Motor Truck Co., Syracuse, N. Y.



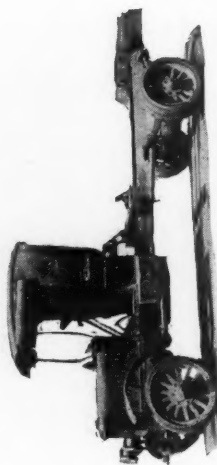
Maccar Model M, 3 1/2-ton Chassis, \$3600.
Maccar Truck Co., Scranton, Pa.



Armleder KW, 3 1/2-ton Stake, Chassis, \$3600.
O. Armleder Co., Cincinnati, Ohio.



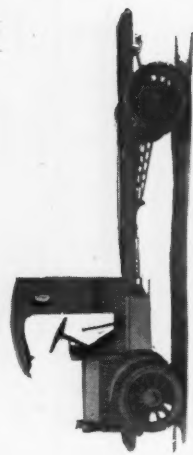
Brockway R, 3 1/2-ton Open Flareboard, \$3340.
Also Stake, \$3380; Open Flareboard, \$3340; Panel, \$3550; Covered Flareboard, \$3480.
Brockway Motor Truck Co., Cortland, N. Y.



Corbitt Model A, 3 1/2-ton Chassis, \$3600.
Also Stake, \$3725; Open Flareboard, \$3725; Panel, \$3750; Screen Side Express, \$3800; Covered Flareboard, \$3800.
Corbitt Motor Truck Co., Henderson, N. C.



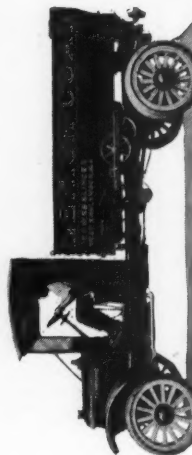
Gramm-Bernstein W, 3 1/2, 3 1/2-ton Stake.
Gramm-Bernstein Motor Truck Co., Lima, Ohio.



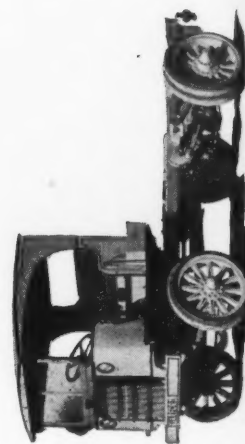
Bourne Magnetic XM, 3 1/2-ton Chassis, \$4200.
Bourne Magnetic Truck Co., Philadelphia, Pa.



Brockway Model R, 3 1/2-ton Stake, \$3380.
Also Open Flareboard, \$3340; Panel, \$3550; Screen Side Express, \$3540; Covered Flareboard, \$3480.
Brockway Motor Truck Co., Cortland, N. Y.



Day-Elder C, 3 1/2-ton Coal Body, Chassis, \$2365.
Day-Elder Motors Corp., Newark, N. J.



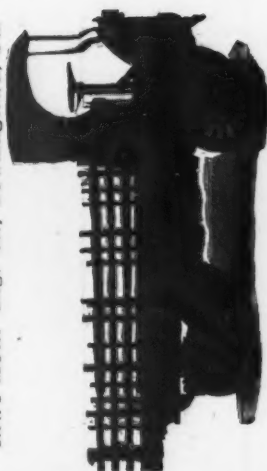
Garford Model 77-B, 3 1/2-ton Chassis, \$3700.
Garford Motor Truck Co., Lima, Ohio.



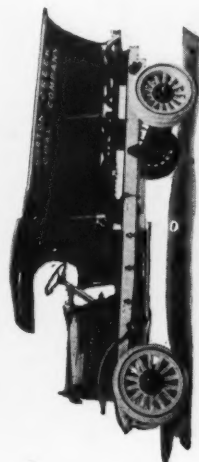
Kelly-Springfield K-40, 3 1/2-ton Chassis, \$3850.
Kelly-Springfield Motor Truck Co., Springfield,
Ohio.



Rowe 3 1/2-ton Chassis, \$3400.
Rowe Motor Mfg. Co., Downingtown, Pa.



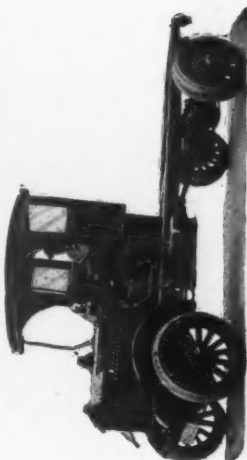
King, 3 1/2-ton Chassis, \$2800.
A. R. King Mfg. Co., Kingston, N. Y.



Larrabee-Deyo Model R, 3 1/2-ton Coal Body,
Chassis, \$3650.
The Larrabee-Deyo Motor Truck Co., Inc.,
Binghamton, N. Y.



Selden Model NL, 3 1/2-ton Chassis, \$3400.
Selden Motor Vehicle Co., Rochester, N. Y.



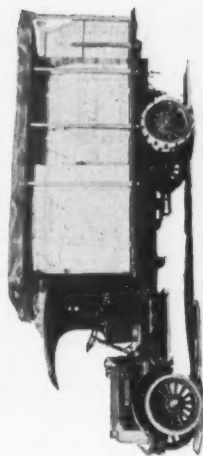
Bessemer Model E, 3 1/2-ton Chassis, \$3450.
Bessemer Motor Truck Co., Grove City, Pa.



Evans Model J, 3 1/2-ton Chassis, \$3300.
Merchant & Evans Co., Philadelphia.



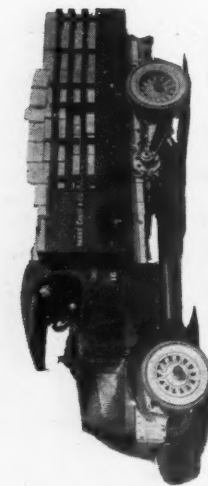
Schacht 3 1/2-ton Flareboard, Chassis, \$3700.
G. A. Schacht Motor Truck Co., Cincinnati.



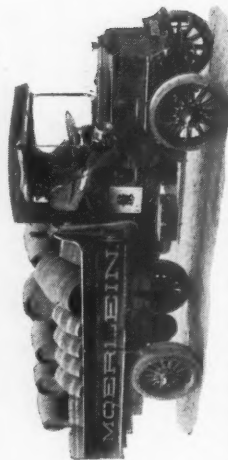
Hurlburt Model 3, 3 1/2-ton Covered Platform,
Chassis, \$3850.
Hurlburt Motor Truck Co., New York City.

3 1/2 Ton Gasoline Commercial Cars

Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Band; D, Disk	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pr. Cent of Weight on Rear Wheels
Armleder KW	6910	3600	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Shelb	Bosh	...	FS	D	W	Selec	3	Timk	8.8-1	156	36x5	36x5D	Pier	70
Atterbury TD	3575	3575	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Zen	Elism	...	FS	D	W	B-Lipe	3	Timk	10.3-1	167	36x5	40x5D	C	75
Bessemer E	6300	3450	Cont	4 1/2 x 5 1/2	28.9	4	3	L L L L L	C	C	Rayf	Dix	...	FS	D	W	Selec	3	Timk	7.8-1	167	36x5	36x5D	Pier	85
Bourn-Mag. XM	7000	4200	Herc	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	C	Zen	Elism	Entz	FS	C	W	Entz	3	Timk	...	160	36x5	36x5D	Simp	80
Brookway R	6400	3750	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	C	Shelb	Elism	...	FS	C	W	B-Lipe	3	Timk	10.3-1	164	36x5	36x5D	Mon	75
Clydesdale 90	6500	3600	...	4 1/2 x 5 1/2	28.9	4	3	L L L L L	C	T	Zen	Elism	...	FS	C	W	Selec	3	Flot	10.1	156	36x5	36x5D	Simp	80
Corbitt A	6780	3600	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Strm	Elism	G&D	Sp	D	W	I-Cl	3	Flot	8.8-1	168	36x5	36x10	Pier	73
D-E Model C	4600	3300	Buda	4 1/2 x 5 1/2	36.1	4	3	L L L L L	C	T	Zen	Berl	...	FS	D	W	Selec	3	Hay	8.7-1	156	36x4	36x7	Pier	65
Evans J	7100	3700	Wis	4 1/2 x 5 1/2	28.9	4	3	L L L L L	C	T	Zen	Bosh	...	FS	D	W	Selec	3	S-El	...	128	36x5	36x5D	Own	90
Garford 77B	7235	3700	Wauk	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Rayf	Bosh	...	FS	D	W	B-Lipe	3	Timk	10.3-1	158	36x5	40x5D	...	90
Gram-Bernstein	6400	3850	Buda	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Zen	Elism	West	Sp	D	W	I-Cl	3	Timk	8.7-1	150	36x5	40x5D	...	93
Hurlburt 3	8285	3850	Own	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	C	Rayf	Elism	...	FS	D	W	B-Lipe	3	Own	8.7-1	150	36x5	40x5D	Own	65
Kelly-Spd K40	6500	2800	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	C	Shelb	Bosh	Opt	FS	D	W	Cott	3	Dead	10.2-1	154	36x5	36x5D	Pier	75
King	5700	3650	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	C	Shelb	Bosh	...	FS	D	W	Selec	3	Sheld	8.8-1	154	36x5	36x5D	Pier	65
La'bee-Deyo R	6175	3600	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Strm	Bosh	...	FS	D	W	Selec	3	Timk	8.8-1	156	36x5	36x5D	Pier	65
Macar M	3400	...	...	4x6	25.6	4	4	L L L L L	C	T	Opt	Bosh	...	FS	D	W	Selec	4	...	...	174	36x5	...	Pier	60
Rowe	6900	3600	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Strm	Bosh	...	FS	D	W	Selec	3	Flot	7.8-1	168	36x5	36x5D	Own	70
Sanford W35	5870	3700	Buda	4 1/2 x 5 1/2	28.9	4	3	L L L L L	C	T	Shelb	Bosh	...	FS	D	W	Selec	3	Flot	10.3-1	168	36x5	36x5D	Pier	70
G. A. Schacht	6330	3400	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Strm	Elism	...	FS	D	W	Selec	3	Flot	10.3-1	168	36x5	36x5D	Pier	70
Selden NL	6330	3400	Cont	4 1/2 x 5 1/2	32.4	4	3	L L L L L	C	T	Strm	Elism	...	FS	D	W	Selec	3	Flot	10.3-1	168	36x5	36x5D	Pier	70



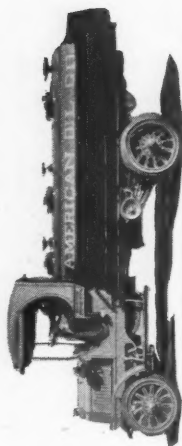
Mack AC, 3 1/2-ton Stake, Chassis, \$4250.
International Motor Co., New York City.



U. S. Model J, 3 1/2-ton Flareboard, Chassis, \$3650.
United States Motor Truck Co., Cincinnati, Ohio.



Tiffin PW, 3 1/2-ton Panel Body, Chassis, \$3400.
Tiffin Wagon Co., Tiffin, Ohio.



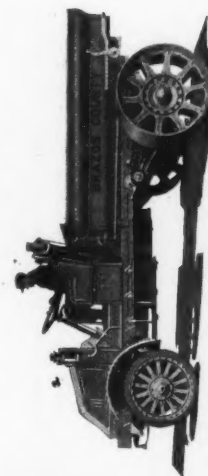
U. S. Model D, 3 1/2-ton Tank Body, Chassis, \$3350.
United States Motor Truck Co., Cincinnati, Ohio.

3 1/2 Ton Gasoline Commercial Cars

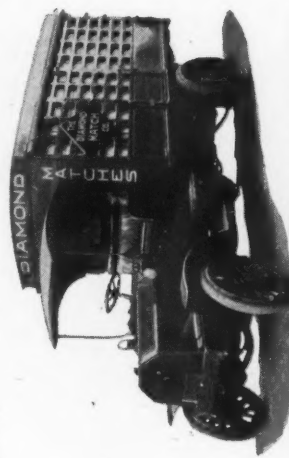
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pt. Cent of Weight on Rear Wheels
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Mack PW	9970	4250	Own	5x6	40	4	2	L	C	T	Strm	Dlx	...	FS	D	C	Selec	3	Dead	11.7-1	Opt	36x5	40x5D	Own	65
Tiffin Model D	6850	3400	Cont	4 1/2 x 5 1/2	32.4	4	3	L	C	H	Sheb	Mag	...	FS	C	W	Selec	3	Shield	8-1	Opt	36x5	...	Pier	80
U S Model J	6550	3350	Cont	4 1/2 x 5 1/2	32.4	4	3	L	C	H	Strm	Bosh	...	Sp	C	W	Cott	3	Shield	11.8-1	Opt	36x5	40x5D	Pier	80
Kelly-Spd K45	8730	4000	Own	4 1/2 x 6 1/2	32.4	4	5	T	C	Fed	Rayf	Elism	Opt	Fo	C	C	Covt	3	Dead	10.6-1	150	36x5	40x6D	Own	93
Peerless	7100	4150	Own	4 1/2 x 6 1/2	32.4	4	3	T	G	Own	Strm	Remy	West	Sp	C	C	Selec	4	Dead	8.7-1	151	36x5	40x5D	Own	92.6
Riker	...	...	Own	4 1/2 x 6	25.9	4	3	T	C	T	B&B	Opt	...	FS	C	W	Selec	4	Flot	10-1	Opt	36x5	36x6	Own	54

4 Ton Gasoline Commercial Cars



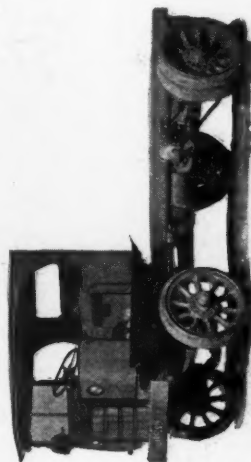
Kelly-Springfield Model K-45, 4-ton Dump, Chassis, \$4000.
The Kelly-Springfield Motor Truck Co., Springfield, Ohio



Peerless, 4-ton Special Stake, Chassis, \$4150.
Peerless Motor Car Co., Cleveland, Ohio.



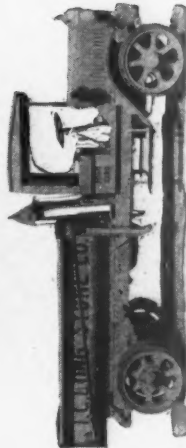
The Riker, 4-ton Special Stake.
Locomobile Co. of America, Bridgeport, Conn.



Garford 68 or 69, 5-6-ton Chassis, \$4500, \$4700.
Garford Motor Truck Co., Lima, Ohio.



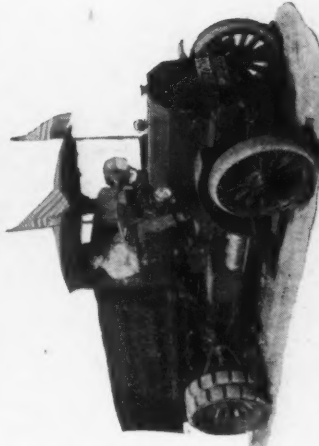
Clydesdale Model 120, 5-ton Chassis, \$4200.
Clyde Cars Co., Clyde, O.



Gramm-Bernstein 5-6-ton Hoist Body.
Gramm-Bernstein Motor Truck Co., Lima, O.



Kelly-Springfield K-50, 5-ton Chassis, \$4600.
Kelly-Springfield Motor Truck Co., Springfield, Ohio.



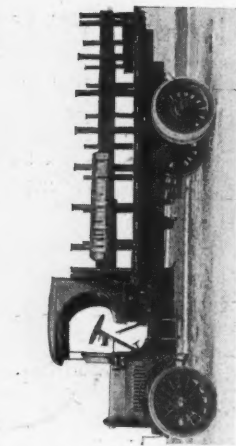
Peerless, 5-ton Flareboard, Chassis, \$4700.
Peerless Motor Car Co., Cleveland, Ohio.



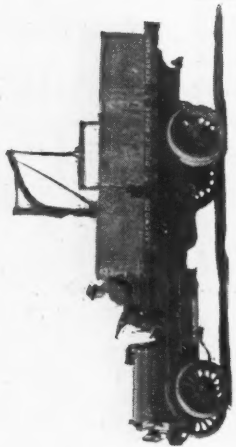
Mack AC, 5-ton Flareboard, Chassis, \$4750.
International Motor Co., New York City.

5 Ton Gasoline Commercial Cars

Name and Model Number g. c.	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Size of Piston Rings	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Fr. Cent of Weight on Rear Wheels
Clydesdale 120	8200	4200	Cont	4 1/4 x 5 1/2	28.9	4	5	1 1/4	L L T T	Q	T	Own	Mag	....	Gr	Q	W	Selec	3	Plot	13.7-1	156	36x6	40x6D	Simp	80
Corbitt AA	8900	4200	Cont	4 1/4 x 5 1/2	32.4	4	3	1 1/4	L L T T	Q	T	Strm	Elsm	G&D	FS	Q	W	I-CI	3	1/2 Plot	11.5-1	168	36x6	36x6D	Pier	75
Garford 68	9100	4500	Wauk	4 3/4 x 6 1/2	36.1	4	3	1 1/4	L L T T	Q	T	Rayf	Bosh	West	FS	Q	W	I-CI	4	Dead	13.3-1	128	36x6	40x6D	Own	91
Gram-Bernstein	8700	4500	Buda	4 3/4 x 6 1/2	33.8	4	3	1 1/4	L L T T	Q	T	Fich	Elsm	....	FS	Q	W	B-Lipe	4	Own	10.8-1	168	36x6	40x6D	....	93
Hurlburt 5	7800	4600	Own	4 1/2 x 6 1/2	32.4	6	5	1 1/4	L L T T	Q	T	Rayf	Elsm	Opt	FS	Q	W	Covt	3	Dead	10.3-1	150	36x6	40x6D	Own	85
Kelly-Spd K50	9175	4600	Wauk	5.1 x 5 1/2	42	4	3	1 1/4	L L T T	Q	T	....	Bosh	....	FS	Q	W	B-Lipe	4	Timk	10.3-1	186	36x6	40x6D	Pier	65
Mackcar U	8000	4500	Own	5 x 6	40	4	4	1 1/4	L L T T	Q	T	Strm	Dix	....	FS	Q	W	Selec	3	Dead	10.5-1	151	38x6	40x6D	Own	92.6
Peerless	10550	4750	Own	4 1/2 x 6 1/2	32.4	4	4	1 1/4	L L T T	Q	T	Strm	Remy	....	Gr	Q	W	Selec	4	Plot	7.8-1	168	36x6	40x6D	Own	..
Pierce-Arrow	....	5500	Own	4 1/2 x 6	38	4	4	1 1/4	L L T T	Q	T	Own	Mag	....	Gr	Q	W	Selec	3	Plot	7.8-1	168	36x6	40x6D	Own	..



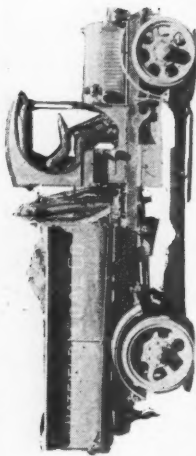
Schacht, 5-ton Stake, Chassis, \$4700.
G. A. Schacht Motor Truck Co., Cincinnati, O.



Tiffin Model RW, 5-ton Special Platform,
Chassis, \$4550.
Tiffin Wagon Co., Tiffin, Ohio.



Selden Model D-DL, 5-ton Chassis.
Selden Motor Vehicle Co., Rochester, N. Y.



U. S. Model K, 5-ton Coal Body, Chassis, \$4550.
United States Motor Truck Co., Cincinnati, Ohio.



White, 5-ton Stake Body, \$5250.
The White Co., Cleveland, Ohio.

5 Ton Gasoline Commercial Cars

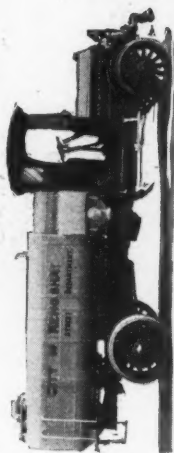
Name and Model Number	G. C.	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Per Cent of Weight on Rear Wheels
G. A. Schacht D-DL		7500	4700	Buda	4 1/4 x 5 1/2	28.9	4	3	L	A	T	Sheb	Bosh	...	FS	C	W	Selec	3	Flot	14-1	168	36x5	40x6D	Dup	70
Tiffin RW		8400	4550	Cont	4 3/4 x 5 1/2	36.1	4	3	L	C	Bus	Strm	Elism	...	FS	D	W	Selec	4	Timk	13.7-1	168	36x6	40x6D	Pier	70
U S K		8500	4550	Wauk	3 3/4 x 5 1/4	33.3	6	3	L	C	T	Sheb	Mag	Spid	FS	D	W	Selec	3	Sheld	11.7-1	168	36x5	40x6D	Pier	65
White		8000	5000	Own	4 1/4 x 6 3/4	36.1	4	3	L	C	C	Own	Bosh	...	FS	D	C	Selec	4	Own	8.7-1	169	36x5	40x6D	Wauk	80

6 Ton Gasoline Commercial Cars

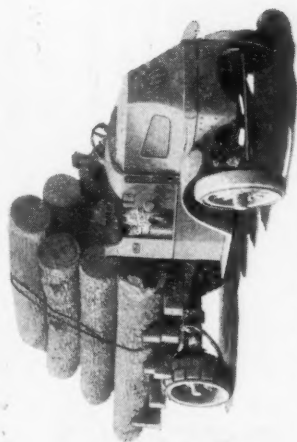
Garford 69	9250	4700	Wls	5.1x5 1/2	41.5	4	3	1 1/4	L	C	T	Rayf	Bosh	...	FS	D	C	Selec	4	Dead	13.3-1	128	36x6	40x7D	Own	93
Kelly-Spd	9500	4750	Own	4 1/2 x 6 1/2	32.4	4	4	5 1/4	L	C	Fed	Strm	Elism	Opt	Sp	C	C	Covt	3	Dead	12.3-1	150	36x6	40x7D	Own	92.5
Peerless	8550	5200	Own	4 1/2 x 6 1/2	32.4	4	3	3 1/4	L	C	Own	Strm	Remy	...	FS	D	C	Selec	4	Dead	10.5-1	151	38x7	40x7D	Own	92.5
Tiffin SW	9000	4650	Cont	3 3/4 x 5 1/4	33.7	6	3	3 1/4	L	C	T	Sheb	Mag	Spid	FS	D	W	Selec	3	Sheld	13-1	168	...	...	Pier	65



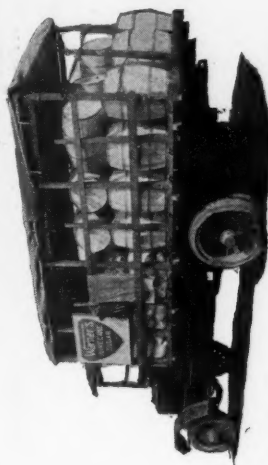
Kelly-Springfield K-60, 6-ton Chassis, \$4750.
Kelly-Springfield Motor Truck Co., Springfield, Ohio.



Tiffin SW, 6-ton Tank Body, Chassis, \$4650.
Tiffin Wagon Co., Tiffin, Ohio.



Mack AC, 7-ton Logging Body, Chassis, \$5000.
International Motor Co., New York City.



Hurlburt Model 7, 7-ton Covered Stake.
Chassis, \$6500.
Hurlburt Motor Truck Co., New York City.

7 Ton Gasoline Commercial Cars

Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Slide of Piston Rings	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	P. Cent of Weight on Rear Wheels	
Gasoline Tractor Trucks																											
G. C.																											
Hurlburt 7	10000	6500	Buda	3 3/4 x 5 1/2	33.8	6	3	1/2	L	C	T	Fitch	Elism	....	FS	D	D	W	Selec	4	Own	13.3-1	Opt	36x6	36x6D	....	85
Mack	10950	5000	Own	5x6	40	4	2	1	T	C	T	Strm	Dix	....	FS	D	D	C	Selec	3	Dead	....	Opt	36x7	40x7	Own	..
Arm'l'r HW 2-ton	4600	2750	Cont	4 1/4 x 5 1/4	27.2	4	4	1/2	L	C	T	Sheb	Bosh	....	FS	D	D	W	Selec	3	Timk	8.5-1	108	36x4	36x7	Pier	70
Arm'l'r KW 3 1/2-t.	...	3600	Cont	4 1/2 x 5 1/2	32.4	4	3	1/2	L	C	T	Sheb	Bosh	....	FS	D	D	C	Selec	3	Timk	8.8-1	113	36x5D	36x7D	Pier	70
Evans L 2 1/2 t'n	5500	2850	Wis	4 1/4 x 5	28.9	4	3	1/2	L	C	T	Zen	Bosh	....	FS	D	D	C	Selec	3	Dead	...	118	34x3 1/2D	40x7S	...	75
Gar'd 70B 4 1/2 t'n	4750	2700	Buda	4 1/4 x 5 1/2	28.9	4	3	1/2	L	C	T	Rayf	Bosh	....	FS	D	D	W	B-Liipe	3	Timk	8.5-1	116	36x4	36x4D	Mon	...
Gar'd 68 10 t'n	8450	4600	Wis	5.1 x 5 1/2	41.5	4	4	1/2	L	C	T	Zen	Bosh	....	FS	D	C	W	Selec	4	Dead	13.3-1	102	36x6	40x6D	Own	...
G-Bst'n W 2-ton	4900	...	Wauk	3 3/4 x 5 1/4	22.5	4	4	1/2	L	C	T	Zen	Elism	....	FS	D	D	W	I-C	3	1/2 Flat	8.7-1	34x4	34x3 1/2D	Mon	84	
Koehler K 3-ton	1550	...	Own	3 1/2 x 5	19.6	4	3	1/2	L	C	T	Strm	Elism	....	FS	D	D	I	Selec	3	Torb	7.1	66	34x3	34x5	Mon	...

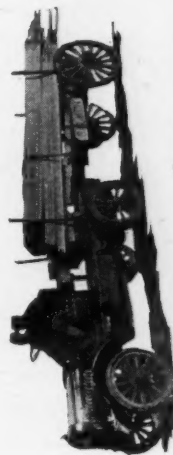
Gasoline Tractor Trucks



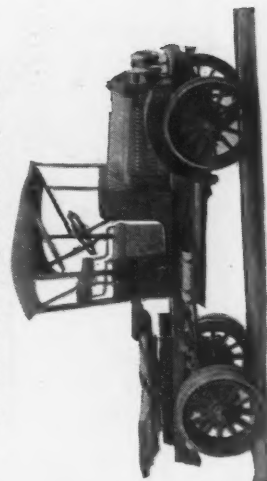
Armleder KW, 3 1/2-ton Tractor, \$3600.
O. Armleder Co., Cincinnati, Ohio.



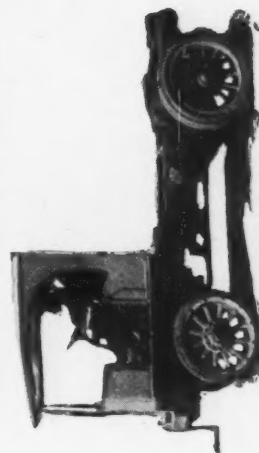
Evans Model L, 2 1/2-ton Tractor, \$2850.
Merchant & Evans Co., Philadelphia.



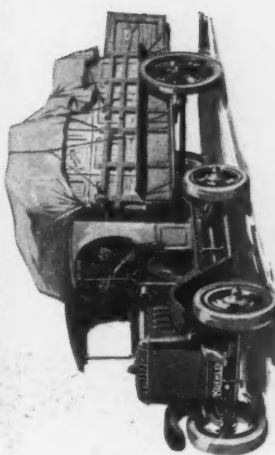
Gramm Model W, 2-ton Tractor Truck.
Gramm-Bernstein Motor Truck Co., Lima, Ohio.



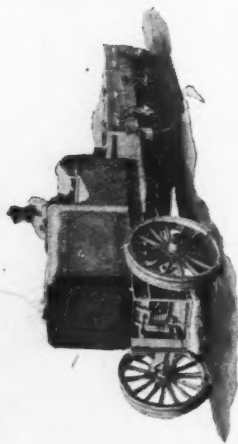
Garford 70-B, 4 1/2-ton Tractor, \$2700.
Garford Motor Truck Co., Lima, Ohio.



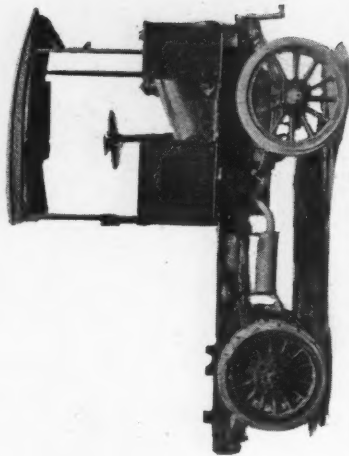
Garford 68, 10-ton Tractor, \$4600.
Garford Motor Truck Co., Lima, Ohio.



Koehler, 3-ton Tractor, \$1550.
H. J. Koehler Motors Corp., Newark, N. J.



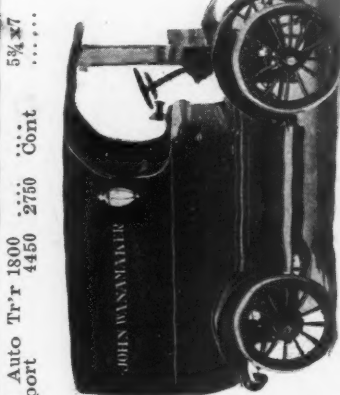
Lombard Auto Tractor Truck.
Lombard Auto Tractor Truck Corp., N. Y. City.



Transport Model 1918, Truck Tractor, \$2750.
Transport Tractor Co., Inc., Long Isl. City, N. Y.

Gasoline Tractor Trucks

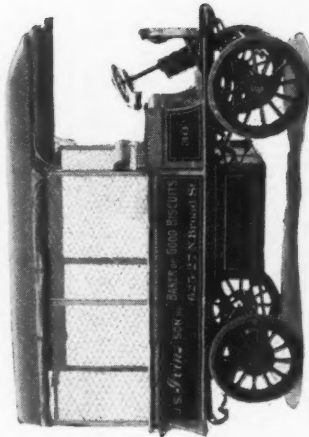
Name and Model Number	Chassis Weight	Chassis Price	Engine Make	Bore and Stroke	Horse Power	No. of Cylinders	Piston Rings per Cyl.	Size of Piston Rings	Valve Location	How Cooled	Name of Radiator	Name of Carburetor	Ignition System	Starting System	Lubrication	Clutch: C, Cone; D, Disk; B, Band	Drive	Transmission	No. of Speeds	Rear Axle Make	High Gear Ratio	Wheelbase	Front Tires	Rear Tires	Governor Make	Pr. Cent of Weight on Rear Wheels
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Commercial, 1000-lb. Panel, \$2355.
Also Stake, \$2245; Screen Side Express, \$2300;
Covered Flareboard, \$2275.
Commercial Truck Co. of America, Philadelphia.



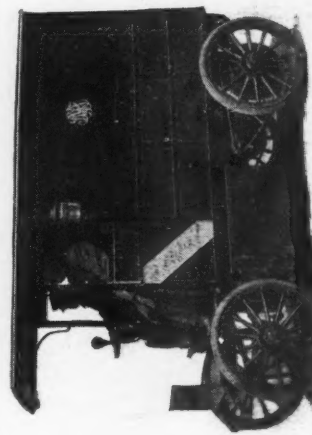
Ward WA, 1000-lb. Chassis, \$1303.50.
Ward Motor Vehicle Co., Mt. Vernon, N. Y.



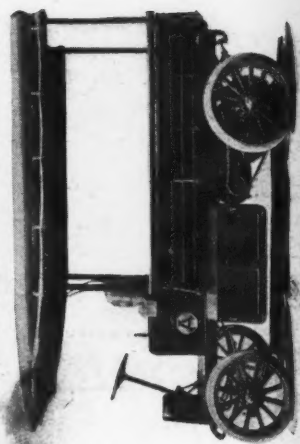
Commercial, 1-ton Screen Side Express, \$2755.
Also Stake, \$2700; Panel, \$2810; Covered Flareboard, \$2730.
Commercial Truck Co. of America, Philadelphia.



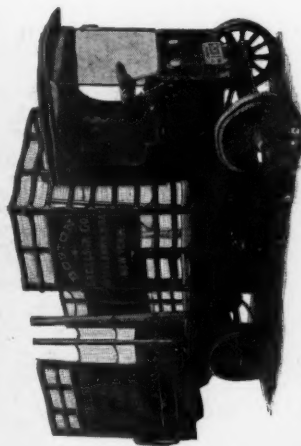
Lansden M, 1000-lb. Panel, Chassis, \$2350.
The Lansden Co., Inc., Brooklyn, N. Y.



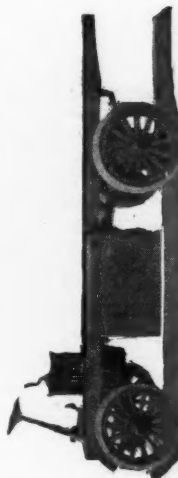
G. V. 1000-lb. Chain Drive Panel.
Also Open Flareboard; Screen Side Express;
Covered Flareboard.
General Vehicle Co., Inc., Long Island City, N. Y.



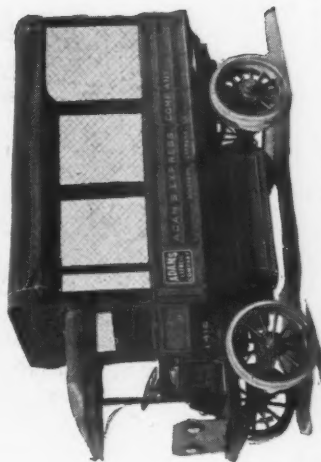
Atlantic Model 1C, 1-ton Covered Flareboard.
Also Flareboard; Screen Side Express;
Covered Flareboard.
Atlantic Electric Vehicle Co., Newark, N. J.



Atlantic, Model 20, 2-ton Stake.
Also Open Express; Panel; Screen Side Express; Covered Flareboard.
Atlantic Electric Vehicle Co., Newark, N. J.



Ward WB, 1-ton Chassis, \$1650.
Ward Motor Vehicle Co., Mt. Vernon, N. Y.



Commercial, 2-ton Screen Side Express, \$3275.
Also Stake, \$3220; Panel, \$3330; Screen Side Express, \$3275; Covered Flareboard, \$3250.
Commercial Truck Co. of America, Philadelphia.



Ward WD, 2-ton Chassis, \$2090.
Ward Motor Vehicle Co., Mt. Vernon, N. Y.



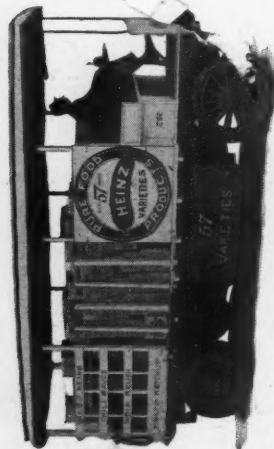
G. V. 1-ton Panel.
Also Open Express; Panel; Screen Side Express; Covered Flareboard.
General Vehicle Co., Inc., Long Island City, N. Y.



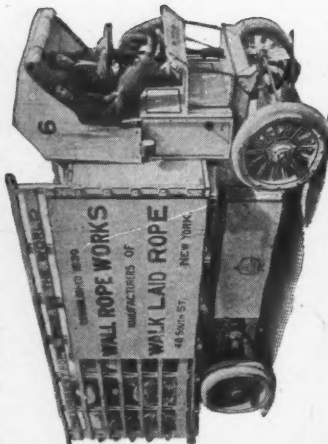
G. V. 2-ton Stake.
Also Open Flareboard; Panel; Screen Side Express; Covered Flareboard.
General Vehicle Co., Inc., Long Island City, N. Y.

Electric Commercial Cars

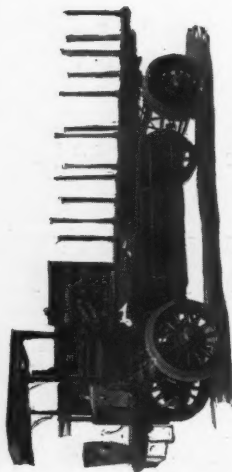
E. C.	Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Front Tires	Rear Tires	Wheelbase	Per Cent Weight on Rear Wheels
W	W S	750	1400	...	10	Opt	40	Gn-El	Gn-El	9	SB	Shield	32x2½	32x2½	88	60
Commercial		1000	1800	2025	13	Opt	60	Gn-El	Own	4	I	Flot	36x3	36x3	Opt	60
General Vehicle		1000	2065	...	12	Own	65	Gn-El	Gn-El	5	W	Flot	36x3	36x3	108	60
General Vehicle		1000	2000	2350	14	Exid	50	Gn-El	Gn-El	5	C	Dead	36x2½	36x2½	89	60
Lansden		1000	2350	...	10	Edis	45	Gn-El	Gn-El	4	C	Dead	36x2½	36x3	96	...
Ward W A		1000	2350	...	12	Exid	50	Gn-El	Gn-El	4	W	Shield	32x3	34x3½	90	...
Atlantic 1-C		2000	4530	...	12	Exid	50	Gn-El	Gn-El	4	C	Timk	34x3½	36x4	103	80
Commercial		2000	2500	2480	12	Exid	60	Gn-El	Own	4	Sp	Flot	36x3½	36x4	100	60
General Vehicle		2000	2950	...	10	Own	55	Gn-El	Gn-El	5	C	Dead	36x3½	36x3½	104	60
Ward W B		2000	3250	...	8.5	Edis	40	Gn-El	Gn-El	4	W	Shield	34x3½	36x4	102	60
Atlantic 2 C		4000	5900	...	11	Exid	45	Gn-El	Gn-El	4	C	Timk	36x3D	36x3D	115½	80
Commercial		4000	3500	3000	10	Exid	55	Gn-El	Own	4	Sp	Flot	36x4	36x4D	116	60
General Vehicle		4000	4050	...	9	Own	55	Gn-El	Gn-El	5	C	Dead	36x4	36x3D	112	60
Ward W D		4000	2250	...	7	Edis	35	Gn-El	Gn-El	4	W	Shield	36x4	38x4	114	60



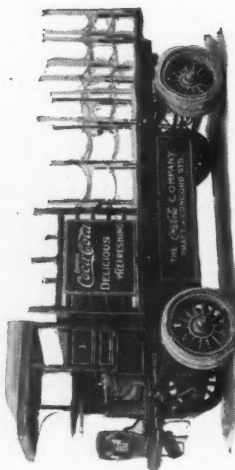
G. V. 3 1/2-ton Stake.
Also Open Flareboard; Panel; Screen Side Express; Covered Flareboard.
General Vehicle Co., Inc., Long Island City, N. Y.



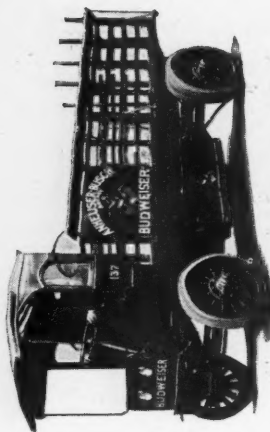
Atlantic Model 5-C, 5-ton Stake.
Also Open Flareboard; Panel; Screen Side Express; Covered Flareboard.
Atlantic Electric Vehicle Co., Newark, N. J.



Commercial, 3 1/2-ton Stake, \$4380.
Also Panel, \$4490; Screen Side Express, \$4435; Covered Flareboard, \$4410.
Commercial Truck Co. of America, Philadelphia.



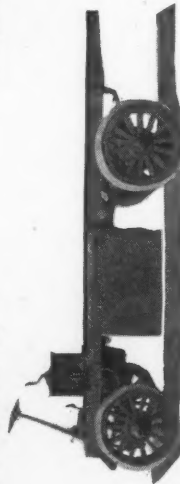
Commercial, 5-ton Stake, \$4945.
Also Panel, \$4945; Screen Side Express, \$5000; Covered Flareboard, \$4975.
Commercial Truck Co. of America, Philadelphia.



Atlantic Model 3C, 3 1/2-ton Stake.
Also Open Flareboard; Panel; Screen Side Express; Covered Flareboard.
Atlantic Electric Vehicle Co., Newark, N. J.



G. V. 5-ton Stake.
Also Open Flareboard; Screen Side Express; Covered Flareboard.
General Vehicle Co., Inc., Long Island City, N. Y.



Ward WF, 3 1/2-ton Chassis, \$2750.
Ward Motor Vehicle Co., Mt. Vernon, N. Y.



Ward WH, 5-ton Chassis, \$3547.50.
Ward Motor Vehicle Co., Mt. Vernon, N. Y.

Electric Commercial Cars

Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Front Tires	Rear Tires	Wheelbase	Per Cent Weight on Rear Wheels
Atlantic 3-C Commercial Vehicle	7000	8000	4160	10	Exid	45	Gn-El	Gn-El	4	C	Timk	36x5	40x4D	135	75
Ward W F	7000	8200	.....	9	Opt	50	Gn-El	Ovnl	4	C	Dead	36x3 1/2 D	36x4D	115	55
Atlantic 5-C Commercial Vehicle	7000	6000	.....	8	Ovnl	30	Gn-El	Gn-El	5	C	Shield	36x6	36x4D	132 1/2	60
General WH	10000	6500	4725	9	Exid	45	Gn-El	Gn-El	4	C	Timk	36x6	36x4D	132	55
	10000	6500	7	Ovnl	45	Gn-El	Gn-El	5	C	Dead	36x7	36x6D	142 1/2	60
	10000	8000	5	Edis	25	Gn-El	Gn-El	4	W	Shield	40x8	42x10	144	60

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810 4 18.2	Willys-Overland Co.	28
840 4 22.5	Cortland Cart & Carriage Co.	28

1000 Pound Commercial Cars

Price Cyl. H.P.	Maker	Page
750 4 22.5	Bell Motor Car Co.	28
765 4 14.4	Vim Motor Truck Co.	29
775 4 15.7	Champion Motors Co.	28
775 4 19.6	Norwalk Motor Car Co.	28
895 4 16.9	Rush Motor Truck Co.	29
995 4 16.9	Rainier Motor Corp.	28
2025 Electric	Commercial Truck Co. of America	49
2350 Electric	Lansden Co., Inc.	49

1200 Pound Commercial Cars

Price Cyl. H.P.	Maker	Page
850 4 22.5	Bell Motor Car Co., Inc.	30
890 4 16.9	Conestoga Motor Truck Co.	30
930* 4 27.2	Willys-Overland Co.	30

1500 Pound Commercial Cars

Price Cyl. H.P.	Maker	Page
750 4 15.6	Stewart Motor Corp.	31
835 4 16.9	Collier Motor Truck Co.	30
875 4 16.9	Kentucky Wagon Mfg. Co.	30
995 4 22.5	Reya Motor Co.	30
1055 4 19.6	Clyde Cars Co.	30
1075 4 15.6	Selden Motor Vehicle Co.	31
1190 4 19.6	Tiffin Wagon Co.	31
1350 4 19.6	Hoover Wagon Co.	30
2300 4 22.5	White Co.	31

1 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
950 4 15.6	Day-Elder Motors Corp.	32
1000 4 19.6	Higrade Motors Co.	32
1200 4 19.6	Trabold Truck Co.	33
1250 4 19.8	Bessemer Motor Truck Co.	31
1250 4 16.9	Brinton Motor Truck Co.	31
1295 4 19.6	Norwalk Motor Car Co.	32
1295 4 19.6	Stewart Motor Corp.	32
1500 4 19.2	Commercial Truck Co.	33
1500 4 19.6	Superior Motor Truck Co.	32
1550 4 19.6	Selden Motor Vehicle Co.	32
1550 4 19.6	Tiffin Wagon Co.	33
1650 4 22.5	Corbitt Motor Truck Co.	32
1750 4 19.6	Abbott & Downing Co.	31
1750 4 19.6	Garford Motor Truck Co.	32
1800 4 22.5	Larrabee-Deyo Motor Truck Co., Inc.	32
2150 4 22.5	Lippard Stewart Motor Car Co.	32
2400 4 25.6	International Motors Co.	32
2480 Electric	Commercial Truck Co. of America	49

1 1/4 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
1150 4 19.6	H. J. Koehler Motors Corp.	33
1245 4 22.5	Bethlehem Motors Corp.	33
1350 4 16.9	Rainier Motor Corp.	33

1 1/2 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
1420 4 16.9	Fulton Motor Truck Co.	34
1450 4 19.6	Conestoga Motor Truck Co.	36
1490 4 22.5	Grant Motor Car Corp.	34
1495 4 19.6	Day-Elder Motors Corp.	34
1595 4 22.5	Turnbull Wagon Co.	34
1695 4 22.5	Stewart Motor Corp.	35
1850 4 22.5	Corbitt Motor Truck Co.	34
1970 4 22.5	Tiffin Wagon Co.	35
2000 4 22.5	White Hickory Wagon Mfg. Co.	35
2100 4 22.5	Garford Motor Truck Co.	34
2150 4 22.5	Sullivan Motor Truck Corp.	35
2275 4 27.2	Atterbury Motor Car Co.	34
2275 4 27.2	Clyde Cars Co.	34
2300 4 22.5	Hurlburt Motor Truck Co.	34
2400 4 27.2	Maccar Truck Co.	35
2450 4 22.5	Brockway Motor Truck Co.	34
2500 4 22.5	Kelly-Springfield Motor Truck Co.	34
2550 4 27.2	Lippard-Stewart Motor Car Co.	35
2750 4 22.5	Vim Motor Truck Co.	35
2800 4 25.6	International Motor Co.	35
3300 4 22.5	White Co.	36

2 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
1755 4 22.5	Day-Elder Motors Corp.	38
1790 4 22.5	Grant Motor Car Corp.	38
1815 2 18.1	Autocar Co.	36
2000 4 22.5	Superior Motor Truck Co.	39
2195 4 27.2	Stewart Motor Corp.	38
2350 4 27.2	Selden Motor Vehicle Co.	39
2400 4 28.9	Abbott & Downing Co.	37
2500 4 27.2	Witt-Will Co., Inc.	39
2550 4 27.2	Bessemer Motor Truck Co.	37
2550 4 27.2	Selden Motor Vehicle Co.	38
2600 4 28.9	Garford Motor Truck Co.	38
2600 4 27.2	Sullivan Motor Truck Corp.	39
2650 4 27.2	Corbitt Motor Truck Co.	37
2675 4 27.2	Atterbury Motor Car Co.	36
2725 4 27.2	Clyde Cars Co.	37
2750 4 27.2	Armleder, O., Co.	36
2800 4 25.6	Rowe Motor Mfg. Co.	38
2850 4 28.9	Blair Motor Truck Co.	37
2850 4 27.2	Brockway Motor Truck Co.	37
2850 4 27.2	Lippard-Stewart Motor Car Co.	38
2950 4 28.9	Schacht, G. A., Motor Truck Co.	38
3000 Electric	Commercial Truck Co. of America	49
3000 4 25.6	International Motor Co.	39
3000 4 27.2	New England Truck Co.	38
3300 4 28.9	Hurlburt Motor Truck Co.	38
3500 4 25.6	Bourne Magnetic Truck Co.	37
3750 4 25.6	Pierce-Arrow Motor Car Co.	38

2 1/4 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
1775 4 25.6	Bethlehem Motors Corp.	39

2 1/2 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
2400 4 27.2	Brinton Motor Truck Co.	40
2500 4 27.2	Tiffin Wagon Co.	40
2550 4 28.2	Vim Motor Truck Co.	40
2650 4 27.2	United States Motor Truck Co.	41
2700 4 27.2	Larrabee-Deyo Motor Truck Co., Inc.	40
2700 4 27.2	Tiffin Wagon Co.	40
2900 4 27.2	Corbitt Motor Truck Co.	40
2950 4 32.4	Maccar Truck Co.	40
2950 4 27.2	United States Motor Truck Co.	41
3000 4 22.5	Kelly-Springfield Motor Truck Co.	40
3000 4 25.6	Rowe Motor Mfg. Co.	41
3300 4 28.9	Schacht, G. A., Motor Truck Co.	40

3 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
3250 4 28.9	Blair Motor Truck Co.	41
4100 4 22.5	White Co.	41

3 1/2 Ton Commercial Cars

Price Cyl. H.P.	Maker	Page
2365 4 28.9	Day-Elder Motors Corp.	42
2800 4 32.4	King, A. R., Mfg. Co.	43
3300 4 36.1	Merchant & Evans Co.	43
3350 4 32.4	United States Motor Truck Co.	44
3400 4 25.6	Rowe Motor Mfg. Co.	43
3400 4 32.4	Selden Motor Vehicle Co.	43
3400 4 32.4	Tiffin Wagon Co.	44
3450 4 32.4	Bessemer Motor Truck Co.	43
3575 4 32.4	Atterbury Motor Car Co.	42
3600 4 32.4	Armleder, O., Co.	42
3600 4 28.9	Clyde Cars Co.	42
3600 4 32.4	Corbitt Motor Truck Co.	42
3600 4 32.4	Maccar Truck Co.	42
3600 4 32.4	Sanford Motor Truck Co.	42
3650 4 32.4	Larrabee-Deyo Motor Truck Co.	43
3650 4 32.4	United States Motor Truck Co.	44
3700 4 28.9	Garford Motor Truck Co.	42
3700 4 28.9	Schacht, G. A., Motor Truck Co.	43
3750 4 32.4	Brockway Motor Truck Co.	42
3850 4 32.4	Hurlburt Motor Truck Co.	43
3850 4 32.4	Kelly-Springfield Motor Truck Co.	43
4160 Electric	Commercial Truck Co. of America	50
4200 4 28.9	Bourne Magnetic Truck Co.	42
4250 4 40	International Motor Co.	44

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

Gasoline and Electric Commercial Cars Indexed According to Chassis Price (Continued From Page 51)

4 Ton Commercial Cars			
Price	Cyl.	H.P.	Maker
4000	4	32.4	Kelly-Springfield Motor Truck Co. ....44
4150	4	32.4	Peerless Motor Car Co. ....44

5 Ton Commercial Cars			
Price	Cyl.	H.P.	Maker
4200	4	28.9	Clyde Cars Co. ....45
4200	4	32.4	Corblitt Motor Truck Co. ....45
4500	4	32.4	Garford Motor Truck Co. ....45
4500	4	32	Maccar Truck Co. ....45
4550	6	33.8	Tiffin Wagon Co. ....46
4550	4	26.1	United States Motor Truck Co. ....46
4600	4	33.8	Hurlburt Motor Truck Co. ....45

Price	Cyl.	H.P.	Maker
4600	4	32.4	Kelly-Springfield Motor Truck Co. ....45
4700	4	32.4	Peerless Motor Car Co. ....45
4700	4	28.9	Schacht, G. A., Motor Truck Co. ....46
4725	Electric		Commercial Truck Co. of America ....50
4750	4	40	International Motor Co. ....45
5000	4	28.9	White Co. ....46
5500	4	38	Pierce-Arrow Motor Car Co. ....45

6 Ton Commercial Cars			
Price	Cyl.	H.P.	Maker
4650	6	33.7	Tiffin Wagon Co. ....46
4700	4	41.5	Garford Motor Truck Co. ....46
4750	4	32.4	Kelly-Springfield Motor Truck Co. ....46
5200	4	32.4	Peerless Motor Car Co. ....46

7 Ton Commercial Cars			
Price	Cyl.	H.P.	Maker
5000	4	40	International Motor Co. ....47
6500	6	33.8	Hurlburt Motor Truck Co. ....47

Tractor Trucks			
Price	Cyl.	H.P.	Maker
1550	4	19.6	Koehler, H. J., Motors Co. ....47
2700	4	28.9	Garford Motor Truck Co. ....47
2750	4	27.2	Armleder, O. ....47
2750	4		Transport Tractor Co., Inc. ....48
2850	4	28.9	Merchant & Evans Co. ....47
3600	4	32.4	Armleder, O. ....47
4600	4	4.5	Garford Motor Truck Co. ....47

FIRST HALF OF REVIEW. LAST HALF WILL BE IN THE FEBRUARY ISSUE

Jitney Service at Sharon, Pa.

The Public Service Commission at Harrisburg, Pa., in October, granted certificates of public conveyance to fourteen jitney owners and refused two at Sharon, Pa. The fact that these two men operated in defiance to the orders of the commission and were later fined \$50 and costs was the reason for their failure to secure the coveted certificate. The certificates are granted for a period of three years or "until rescinded by the commission."

The certificates secured by the Sharon men are the first to be granted in the State. Opposition to the jitneys by the trolley companies throughout the State has heretofore been successful. Even in the largest cities the jitney men were refused certificates.

In its decision the commission says: "It has been found and determined that the granting of said application is necessary and proper for the service, accommodations, convenience and safety of the public and this certificate is issued evidencing its approval as set forth."

The certificates permit the jitneys to operate from the Erie station in Sharon across State Street, down Dock Street to Broadway, Farrell, and to terminate on Broadway at Adams Street.

E. B. Smith's auto-bus was one of the 14 service cars given a certificate to operate

between Sharon and Farrell, Pa. The conveyance is a Ford chassis with a Smith model-a-form body, made by the Grove City Carriage Co. It has a seating capacity of fourteen.

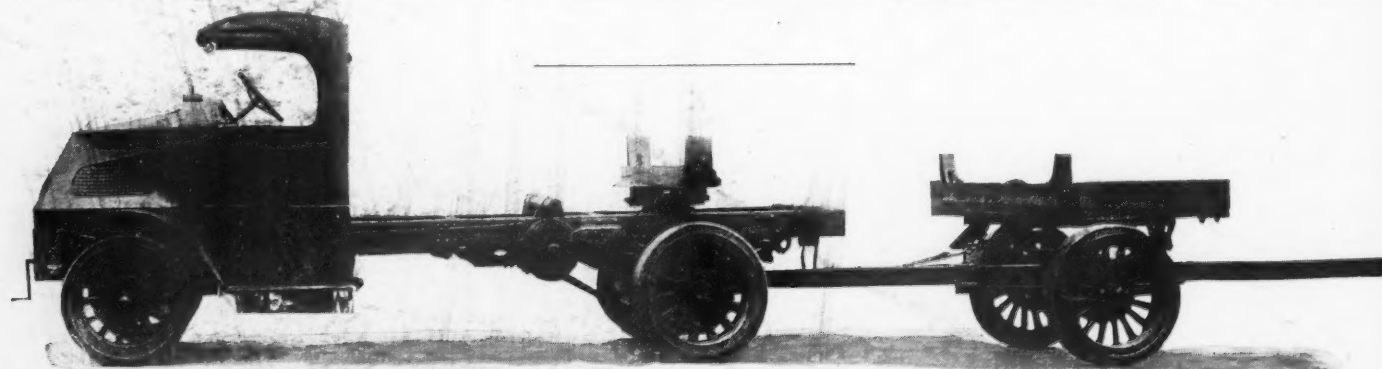
The jitneys operate from 5.30 A. M. to 6.30 P. M., making a return trip of four miles in twenty minutes and averaging 25 trips a day. Most of the men carried by

these buses are engaged in making war material for the Government.

H. B. Shontz Co., Inc., New York, N. Y., has been appointed distributor, and will act as central service station for U-S-L storage batteries, which are made by the United States Light & Heat Corp., Niagara Falls, N. Y.



E. B. Smith's Auto-Bus. One of the Jitneys Operating Between Sharon and Farrell



Mack Truck and Trailer Combination, With the Trailer Wheels Adjustable Forward and Backward, According to the Load Length

A trailer constructed so that it can be shortened or extended to conform to the length of the load has been devised by the International Motor Company, New York, and is in successful operation in the Northwestern logging districts. The two-wheel trailer is attached under the frame of the truck back of the rear axle, and extends about twenty feet behind the motor vehicle. The trailer is of simple construction, the two wheels being supported by a heavy steel bar, while above them is the rear bolster that supports one end of the load of logs. This bolster and the trailer wheels can be moved forward or backward upon the steel bar and clamped in position, so that whether the logs be long or short they can form a perfectly balanced load between the truck and the trailer. The same device would be of value in handling other loads of varying length, such as timbers or steel beams.

A Lesson in Tire Economy

TO better acquaint the truck owner whereby he can keep his truck tires and to show him the way with his problem of conserving afield and of value to his country at minimum cost, the B. F. Goodrich Rubber Co., Akron, Ohio, has listed a sequence of the more common solid tire abuses, accentuating them with illustrations.

In the desire to get the very most out of the motor truck the owner is apt to overload his truck. The consequence is possi-

There is positively no remedy, it is claimed, for a tire broken down from overloading. The reason is that the rubber has been compressed beyond the safe limit of elasticity. Little cracks occur and the deterioration commences.

Because a tire is solid many people believe it escapes one of the destroyers of the pneumatic tire, namely, heat. Yet it is a fact that heat is as disastrous to solid tires as it is to inflated tires.

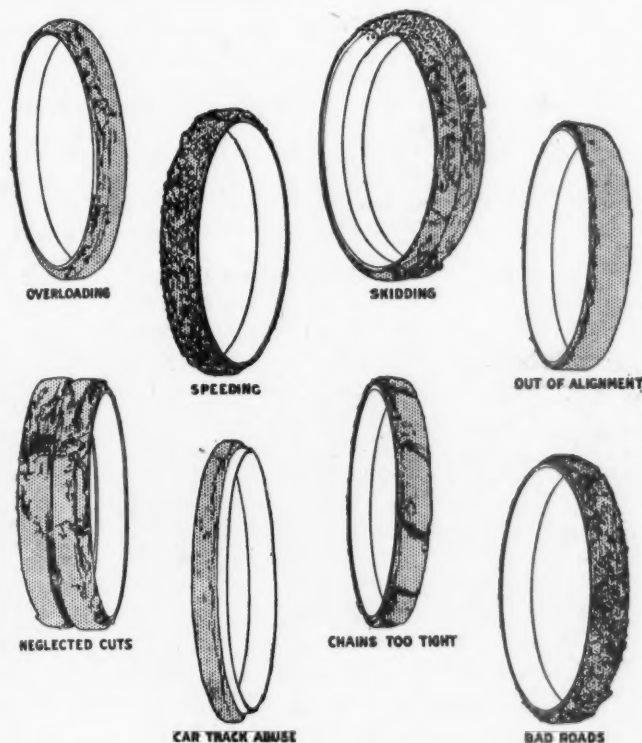
Heat makes its appearance in overspeeding. When a truck is driven, loaded or

Neglect of cuts is portrayed in the next illustration. The driver evidently had driven over broken glass, etc., and ignored the cuts, with the result they widened as the truck progressed. Tire cuts should be healed with cement or trimmed to lessen resistance.

In large cities the fault exemplified in Illustration No. 6 is most noticeable. The truck has been driven in car tracks. One half the tire has carried the load while the other half has been cut to pieces in tracks.

All anti-skid devices have been found injurious to solid tires but the least injurious is the loose chain. In the illustration the anti-skid contrivance has been of the permanent type and has eaten into the surface of the tire. Anti-skid devices should be used when only vitally necessary.

While bad roads cannot be avoided the pilot who used the bad road simply because it will cut off distance risks permanent injury to his cushions.



Illustrating the Results of Various Forms of Truck Tire Abuse. These Drawings May be Used as a Key to Ascertain Just What is Doing the Damage and to Rectify it.

Concreting in Cold Weather

Special care must be taken in concrete road work. It is so exposed that low temperatures, not perhaps seriously detrimental to massive concrete work surrounded by forms, will prove extremely harmful to concrete road work. A means of protection that is practical on street work is to use light scantling to suspend steam pipes, and support a canvas cover, the edges of which, at the ground, are covered with earth to prevent air circulation from below. It is also well to have an occasional cross wall of canvas to divide the space into a number of smaller ones, thus preventing air circulation. After the concrete has been thus protected for two or three days, it may be covered with straw or brush and in this way, if the temperatures are not extremely low, effective protection is afforded.

Unless concrete can be protected, to insure that it will not be subjected to temperature much below 40 deg., the work had better be closed down entirely, as only failure can result from exposure to low temperatures.

The amount of water should be considerably less than is used during warm weather, and the rolling somewhat more, to insure freedom of all excess water.

The roadbed ahead of the concrete work should not be taken down to grade until just before the concrete is laid, if it is possible to arrange the work in this way. If this can be done the warmth in the ground will not be required to overcome a chilled layer of earth on the surface of the roadbed. Concrete should never be laid on a roadbed that contains frost.

Running steam pipes through piles of materials and using warmed water should be resorted to in addition to other precautions.

More concerning this subject will be found in a bulletin entitled "Concreting in Cold Weather," which may be obtained from the Portland Cement Association, 101 Park Ave., New York City.

bly more disastrous on the tires than on abuses, accentuating them with illustrations. No. 1 will give an idea of the damage accruing from this fault.

Below is a table of the maximum carrying capacity that single and dual tires should bear:

SINGLES					
Width of Tire	Height of Tire	Width of Wheel	Diam. of Wheel	Carrying Capacity	
5 13-16	3¼	4¼	28	2500	
			30		
			34		
			36		
			28		
6 13-16	3¾	5¼	30	4000	
			32		
			34		
			36		
			30		
7 13-16	3⅞	6¼	32	6000	
			34		
			36		
			30		
			34		
DUALS					
Nominal Size of Tire	Width of Tire	Height of Tire	Width of Wheel	Diam. of Wheel	Carrying Capacity
34x5	11%	3¼	10	28	7000
36x5				30	
40x5				34	
42x5				36	
34x6				28	
36x6	13%	3¾	12	30	10000
38x6				32	
40x6				34	
42x6				36	
36x7				30	
40x7	15%	3⅞	14	34	12000

unloaded, pell-mell over a smooth or rough road the heat that is generated within the tire, due to rapid displacement and road friction, is serious enough to cause a permanent injury. Usually it doesn't take long for disintegration to take place.

In Illustration No. 3 we have the effect of skidding. Drivers should realize that their trucks will stop quicker if the brakes are applied gradually rather than quickly. Also they should be admonished against rapid turning of corners. Another thing: If one brake takes hold before the other the tire is bound to skid. This develops a flat spot on the tread and the next time the same emergency arises this same spot is the sufferer as the wheel will not skid until this one place on the tread has been reached.

On first glance one would say the tire in Illustration No. 4 had given satisfactory mileage. However, it is a case of the wheels being out of alignment. The effect upon the tire is a continual friction. The wheel out of kilter partly rolls and partly slides and the tread disappears quickly. If a driver notes a scaly appearance on his tread he should remedy his alignment immediately. Hard jolts cause this trouble.

Philadelphia's Merchants Parcel Delivery

The Principal Concern in the Quaker City That is Doing What is Substantially a Co-operative Delivery Business

By K. H. LANSING

WARTIME economies have given an impetus to co-operative delivery, just as they have to co-operative buying. It is being learned, though slowly, that the specialist in delivery performs the functions of a quasi-public utility, not only saving patrons expense in the matter of vehicle purchases, upkeep and repair, but additional overhead costs, the layout of money that considerable extra labor involves and the saving of time through the elimination of many merchants making deliveries over the same route at the same hour, thus affording relief from the vexatious details attendant upon the distribution of merchandise, and releasing time and energy for the buying and selling ends of the business.

While the shortage of labor and increasing cost of doing business have forced merchants in many parts of the country to turn their attention to centralized delivery systems which, commercial economy experts say, effect a saving over individual delivery methods, of from 20 to 50 per cent., Philadelphia is one of those cities whose merchants have not needed war's rude promptings to adopt time saving and economical distribution plans. There are a number of package deliveries in the city partaking more or less of the nature of centralized distributive concerns, though none in which merchant patrons hold stock, which latter method, perhaps, is more truly co-operative. The only centralized delivery in Philadelphia which does business on a large scale is the Merchants Parcel Delivery.

Starting in a small way in 1883, the concern, of which W. Stewart is president and B. J. Graham vice-president, maintains a large establishment at 1010-1014 Race St., the radius of its deliveries and collections being limited only by the confines of Philadelphia county. Both merchant and householder of the suburban district and rural community evidently appreciate the advantages of co-operative delivery and collection, for the Merchants Parcel Delivery, which in normal times uses five automobiles for delivery, four wagons for the same purpose and four wagons for collection, is busy continuously. The business, of course, is considerably elastic, there being rush periods, as, for instance, several weeks prior to the Christmas holidays, and slack periods. While the concern does not have its own garage, it has an arrangement with certain automobile and livery companies, under which it is able to increase to any required number, at short notice, either its automobiles or its wagons.

In a "mixed" delivery scheme of this kind, the problem may seem more complicated, but through systematization and close attention to detail, all difficulties have been minimized. In fact, "short cuts" and

elimination of unnecessary red tape in both office methods and actual operation are strong points with this organization.

Philadelphia (city and county) is divided into twenty nominal districts by the Merchants Parcel Delivery, but sometimes has to be redistricted during especially busy periods, according to the volume, or concentration of business. Four of the concern's automobiles are Fords—light trucks of 500 lb. capacity—while the fifth is a Vim of half-ton measure. The Fords run on about six gallons of gasoline daily and the Vim, being used somewhat less than the Fords, does not use up much more. No automobiles are used for making collections, the wagons, of about the same capacity as the Fords, being employed for that purpose, as well as for deliveries.

There is only one plant—the central station and headquarters, from which all automobiles and wagons start and return—there are no "relays" for routing and no other distributing depots. The concern does not even own a repair shop, the work being done for it. This enables the Merchants Parcel Delivery to center its attention absolutely on the main business in hand—collecting and delivering, which is

made on anyone who attempts to edge-in that kind of business as that way lies disruption and ruin, as more than one co-operative delivery concern specializing in light carrying has discovered.

The hours of delivery are arbitrary and there are but two delivery periods a day from the central station, namely, between 8 and 10 A. M. and 2 and 3 P. M. This is a convenience to the housewife, who knows that when goods are coming from this concern she will not be bothered by a stream of delivery boys to call her from her work at all hours of the day.

Positively no contracts are signed. The concern deems this unnecessary, as it uses its discretion in accepting business and it has been so long in business itself that it feels its reputation and record are sufficient guarantee for the faithful performance of duty. It also saves time and trouble. If the customer wishes either a flat, or a piece rate, he will be accommodated with equal facility.

Every regular customer receives a book of collection forms, Fig. 1, 10 by 6 in., alternate pink and white sheets, the pink to be retained by the customer as a carbon copy of his bin. A clerk has stacked in the

TELEPHONE		OFFICE: 1010-1014 RACE ST., PHILADELPHIA					
MERCHANTS PARCEL DELIVERY							No. 97
Received from	Number	STREET	Pg.	C. O. D.	RECEIVED BY		
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	
						9	
						10	
						11	
						12	
						13	
						14	
						15	

Fig. 1. Collection Form or Store Sheet. Each Customer Receives a Book of These White sheets alternate with pink duplicates for carbon copies. The driver takes the former and the pink copies are retained by the store proprietor

done not only for merchants, but also for individual customers, although light, or comparatively light, parcels only are handled. The concern makes no attempt to obtain even such extra business as larger department stores might have when the capacity of their own autos and wagons are overtaxed. But a delivery system such as this is a boon to the specialty store and the smaller shops of all kinds. While now and then a somewhat heavy package might be carried by way of accommodation for a good customer, a quick "shut-down" is

space allotted to that particular driver, on the table, all the packages from his bin which are to be delivered on that trip. The entries appear in his book in duplicate. He takes out with him the top sheet as a guide and instructions and for the signature of those who are to receive the bundles. His book is nailed to the table and he always finds it in order and waiting for him.

As each bundle is stacked up there is fastened to it a tag, Fig. 3, which is the

and the white to be sent to the Merchants Parcel Delivery by the customer, with the packages collected from him, the form showing customer's name, date and time of collection, name of person for whom designated, street and number, number of packages, whether C. O. D. and by what driver received. Each sheet has room for

formed, is a double row of bins for the reception of the bundles, the lighter ones being placed in the upper tiers. Each bin is numbered with the driver's special number and in front of each bin is the driver's special book, also with duplicate sheets, which book is the record between the driver and the Merchants Parcel Delivery.

Immediately on returning from his delivery trip, each driver deposits all his tags in a little tin receptacle, with compartments for individual tags, close to the office counter.

There is a special form, the invention of President Stewart, which is the record between any casual customer who may drop in with a bundle, or send for a delivery wagon. This, Fig. 4, is contained in a small book and is the office receipt between the casual customer and the concern. Besides the name and address of the delivery business, it has spaces "Received from," and "Received by" and a number for charging purposes, similar to the store sheet plan.

President Stewart believes that for his particular business, at any rate, this "boiling down" of office system to store sheet, or record between regular customer and the office; casual customer's sheet; driver's sheet, or record between each driver and the office and tag, or record between the person receiving the bundle, and the office, is most convenient.

The office files are very carefully and systematically kept and a special book, for quick reference, to avoid running through the files when any matter has to be looked up on the instant, is used to record in brief each day's transactions, reference being made, of course, by date, whereas the files are kept alphabetically.

Close tab is kept on the day's C. O. D. transactions. A clerk copies from each driver's sheet after a trip all C. O. D.'s

MERCHANTS PARCEL DELIVERY			
1010-1014 Race Street			
No. 21			
Driver		Helper	
Route		Time	
		Date	
Number	Street	C.O.D.	Rec'd by
1.			
2.			
3.			
34.			
35.			
36.			

Fig. 2. Driver's Sheet. Record of Delivery Transaction Between Driver and Delivery Concern. The Book Containing These Sheets, in Duplicate, is Nailed to the Table in Front of the Driver's Bin.

15 entries. Each sheet or corresponding pink carbon copy bears a special number from which the charge is made on the delivery concern's files. The driver, on turning in his bundles from the merchant, or customer, to the central station, gives the sheet, properly filled out, to the office. The store sheet forms the record between the customer and the office.

On this driver's sheet, Fig. 2, are his particular number, a space to be filled in with his name, another for that of his helper on auto or wagon, and blanks for the route, time, date, number of parcels going out, whether C. O. D., street address to

FROM	
Date	.....
To	.....
C. O. D.	.....
Del'd by	.....
MERCHANTS	.....
PARCEL DELIVERY	.....
Estab 1883	.....
1010-14 RACE ST.	.....
Received in Good Order	.....
No. of Pkgs.	.....

Fig. 3. Outgoing Parcel Tag

Attached to each bundle, in the central station, before being sent out. It requires the signature of the person receiving the package and is the record of the transaction between the office and the consignee.

Down the center of the long station, for its entire length, runs a table of convenient height and back of it, in each aisle thus

Fig. 4. Casual Customer's Sheet. A Small Book of These, With Duplicates, is Kept on the Office Counter and Forms the Office Receipt or Record Between the Office and the Casual Customer.

Established 1883	
MERCHANTS PARCEL DELIVERY	
Stewart & Graham	
1010-1014 Race Street	
Philadelphia	
Received from	1917.
Received by	
No.	

which they are going and by whom they are received. This, of course, is for outgoing packages, or those to be delivered by the concern. There are spaces for 36 parcel entries on each sheet.

When the driver is about to go out, he takes up his position at the table in front Merchants Parcel Delivery's record between the person for whom the package is intended and the Merchants Parcel Delivery. There are spaces on this tag 4¾ in. long by 2½ in. wide—for the date, person to whom consigned, whether C. O. D., name of the delivery concern and its address, the legend "Received in Good Order"—which has a "meaning all its own" when receipted for—and the number of packages. It is imperative that the driver receive on the tag in its allotted space the signature of the person obtaining the package from him. In this way the delivery concern makes sure that no package has been lost, the receiver's signature attesting that fact and that every package has been received, moreover, intact.

and in addition, each driver who returns with a C. O. D. order turns it over to the company as soon as he comes in. As his signature is attached to the record, it would be impossible for him to "hold out" on the firm, should he so desire. Each driver has a helper.

No drivers or helpers are allowed to solicit orders, deliver or collect outside of schedule hours. This is one of the prime requisites of success for any co-operative delivery. A schedule must be adhered to at all costs.

Special effort is made to hire drivers who are familiar with the city and county and although there is ample opportunity for any driver to find out before he starts on his trip exactly where he is going, reference to a book or directory of any sort is rarely necessary, so well are the routes known by the drivers and helpers.

Mr. Stewart's pet business maxim is: "Put yourself into your business, cut out all unnecessary details of method and don't sell friction with your service."



One and a Half Ton Fulton Truck Improved

Distinctive Radiator Design Retained. Engine More Powerful, Springs and Axles Heavier and Stronger. Other Minor Changes

A NEW model Fulton truck of 1½-tons capacity has just been brought out by the Fulton Motor Truck Co., Farmingdale, Long Island. This model will be known as F-X and is an amplification of the F-1 model delivered last year, with a change in the power plant and transmission and numerous refinements to simplify operation.

The engine used in this model is of Herschell-Spillman design and manufacture. It is a larger and heavier engine throughout than has heretofore been used in Fulton trucks, and is of L-head type with four cylinders, 3¼ x 5 in. The cylinders are cast in block, and each piston has four rings.

The valves in this truck engine are of 3¼ in. bore, and ignition is by a "Dixie" magneto. A Carter carburetor is used, having but one adjustment acting on the air supply, and the engine is not governed. A speed of 25 m.p.h. is attainable, though the recommendation for the truck is but 15 miles, and operating speed is left to the judgment of the driver.

Foot throttle and variable spark are provided for greater ease of operation, efficiency and flexibility.

The transmission is in unit with the power plant and a Borg & Beck clutch, and is of three-speed type.

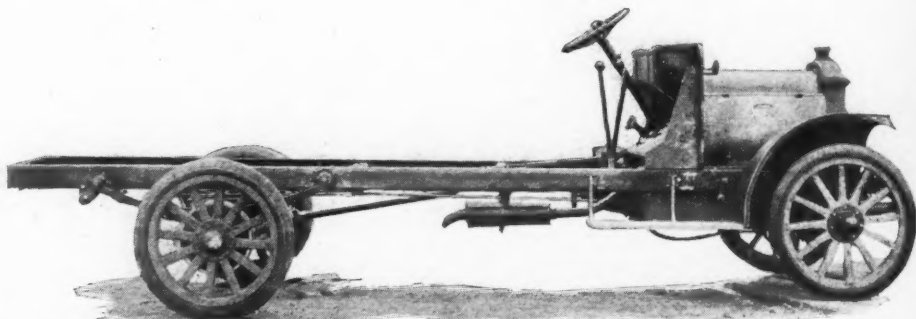
The rear axle is of the Russel internal gear type, stronger and heavier than that used on the F-1 model of last year. The load is carried on a dead rounded axle of chrome vanadium steel. The jackshaft sets forward on the dead axle, and this short-

ens the length of the driveshaft and adds sturdiness to that member. The front axle has been slightly enlarged.

The distinctive Fulton radiator, rounded hood and tank on dash with gravity feed have not been altered.

heavier fenders, castellated nuts and jam nuts on all bolts, and many other improvements are included in the new design.

Tire equipment is of 34 x 3½ in. front and 34 x 5 in. rear, single, solid tires, of standard makes.



Side View of the Fulton Model F-X, 1½-Ton Chassis. The Wheelbase is 136 in.

The brake arrangement has been changed to bring the brake rods inside the frame and supply heavy equalizers, easily accessible, just behind the dead rear axle.

Springs are now supplied with 11 leaves instead of 10, and all leaves are made from heavier stock. This drive is through the springs, and the frame is cleared of all torsion rods and struts.

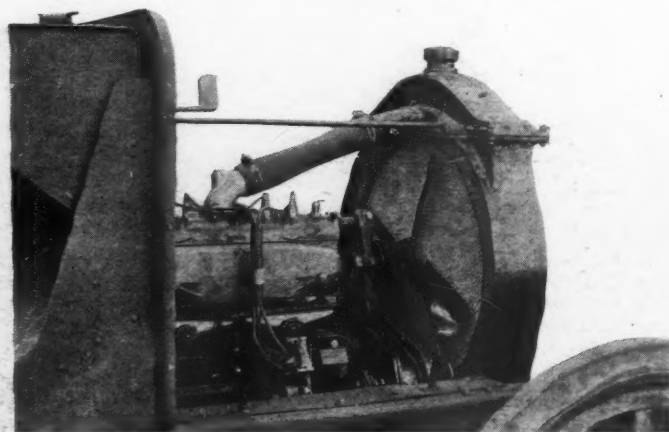
A change to heat-treated malleable castings and drop forgings in numerous parts for greater toughness and strength, new hood fasteners, change in the steering column assembly, a new radiator support, new starting crank bearing, grease cups instead of oil cups, lamp brackets on the dash,

Move Machinery With Trucks

When the new Duplex factory buildings at Lansing, Mich., were ready for occupancy, the Duplex Truck Co. decided to put into practice the theory that the motor truck is a more practicable means of transportation for short hauls than the freight car.

Practically 1000 tons of machinery, steel and other materials were transported overland from Charlotte to Lansing—a distance of 19 miles—by motor trucks. The trips totaled 224, 4½ tons, on an average, being carried on each trip. Each truck made 4 trips per day, and operating costs, including the driver's wage and depreciation, were \$10 per day. The total cost of transporting the 1000 tons by motor truck was \$560.

President H. M. Lee estimates that the company saved \$500 in transportation charges alone by utilizing motor trucks instead of freight cars. To have moved the machinery and materials by railroad 40 freight cars would have been required, and the freight charges would have totaled \$1060 or \$26.50 per car of 25 tons capacity. Another saving resulted from the fact that it was necessary to handle the machinery and materials but twice instead of four times, as would have been the case if freight cars had been used. Besides these savings, the economy of time is worthy of note.



View of the Fulton Power Plant. Showing the Dixie Magneto, the Fulton Radiator and the Extra large 20-in. Fan.

Denmo Line Continued Under Name of Grant

ELECTRIC starting and lighting, with spring cradle battery suspension, straight line drive, transmission-driven governor, cushioned radiator carrier and equipment of unusual completeness are the features of the line of trucks that are produced by the Grant Motor Car Corp., Cleveland, Ohio. Though now known as Grant Trucks, they are really a continuation of the Denmo line formerly manufactured by the Denneen Motor Co., of Cleveland, which company was bought by the Grant Co. some two or three months ago. With the greater facilities, including a new factory just nearing completion, the production of Grant trucks will naturally be on a much greater scale than the output of the truck under its former name.

Models now being built include an 1800 lb. truck known as Model 12, a 1½-ton truck known as Model 10, and a 2-ton truck known as Model 15.

In addition there are Models 11, which is the same capacity as Model 10, but with longer wheelbase and loading space, and 16, the same as Model 15, but longer in wheelbase and loading space.

A distinctive feature of the Grant truck is the unusually large space for pay-load, back of the driver's seat. In the Model 12 this space is 7 ft.; in Models 10 and 15, 9 ft.; in Models 11 and 16, 11¼ ft. Another feature of Grant trucks is the fact that only 63 per cent. of the pay-load is carried on the rear axle.

This line of trucks, under the name Denmo, was one of the first to include a successful electric lighting and starting system. This was made possible by the insertion of a spring-cradle to carry the battery and protect it against the severe jarring and vibration it would otherwise receive. Electric starting contributes greatly to the fuel economy of trucks by removing any temptation to let the engine run idle while unloading, especially in cold weather.

All Grant models are alike in the following specifications: Dixie high tension

magneto ignition, Bijur two-unit starting and lighting equipment, Grant-Lees transmission, Pullman car type frame.

On the Model 12, 1800 lb. truck, front and rear wheels are the B. F. Goodrich steel felloe type. Tires are 32 x 4-in. pneumatic. On Models 10 and 15 steel felloe front wheels with pneumatic tires are standard equipment, with 34 x 4½-in. pneumatic tires, but 34 x 3½-in. solid tires are optional. Rear tires are 34 x 4 in. solid. The Model 12 has a 3¼ x 5 in., four cylinder engine. Models 10 and 15 have 3¼ x 5 in. four cylinder engines.

All models have combined forced feed and splash lubrication and large Fedders cellu-

lar type radiator and thermo-syphon system. In all models the equipment is unusually complete and includes instrument board with speedometer, ammeter, lighting switch, ignition switch, oil gage, carburetor choke. All models have front bumpers, head and tail lights, rain vision windshield, horn, tools, pump, spare rim and spotlight. On Models 10 and 15 the equipment also includes a motometer.

Grant trucks are priced as follows: Model 12, with flareboard express body, canopy top with curtains, completely painted, \$1020; with panel body, completely painted, \$1065. Model 10, 1½-ton capacity, wheelbase 124 in., chassis only, \$1490; Model 11, same as Model 10, but with 140-in. wheelbase, chassis only, \$1585; Model 15, 2-ton capacity, 124-in. wheelbase, chassis only, \$1790; Model 16, same as Model 15, but with 140-in. wheelbase, chassis only, \$1885.

Defiance One-and-a-Half Ton Truck

IT was recently announced that the Turnbull Wagon Co. has been reorganized upon an extensive scale and was to market a motor truck known as the Turnbull. It has now been decided to call the new truck the Defiance.

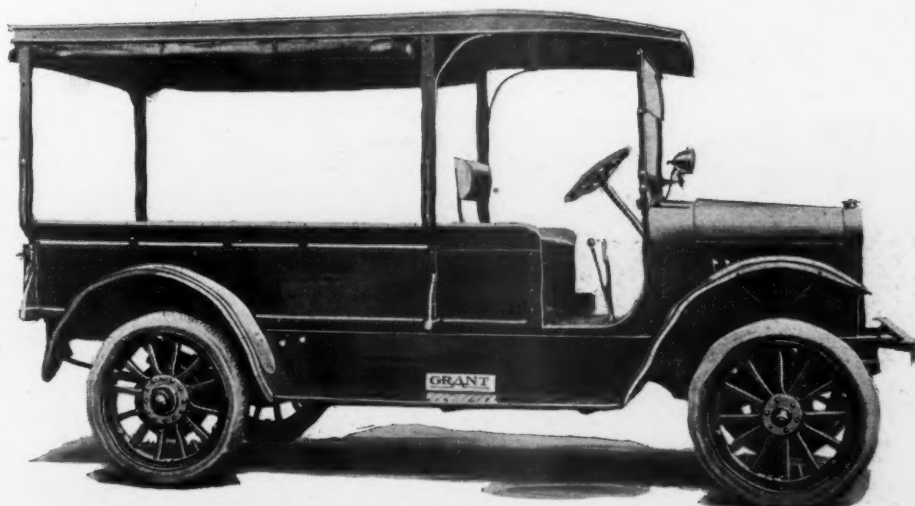
The new company takes the firm name of The Turnbull Motor Truck and Wagon

Co., with truck sales division at Fostoria, Ohio, and factories at Defiance, Ohio.

W. O. Allen, general manager of the Allen Motor Co., Fostoria, Ohio, is president and general manager of the Defiance concern. The truck concern is distinct from the Allen company, but since many of the same men are interested in both concerns,



The 1½-Ton Defiance Truck on Which the Turnbull Motor Truck and Wagon Co., Will Concentrate Its Facilities for the Present.



Grant Model 12, 1800 lb. Capacity, \$1020; With Panel Body the Price is \$1490

the sales and advertising departments of both will co-operate.

For a time all manufacturing facilities will be concentrated on a model of 1½-ton capacity. It is a very husky truck with a channel steel frame of 5½ in. depth. The wheelbase is 135 in., with 116 in. from the back of the cab to the rear of the frame, with 44 in. overhang beyond the rear axle.

Bodies of standard types will be built in the company's own shops, which are well equipped for this kind of work.

The engine is an Allen make of 3¼ in. bore x 5 in. stroke. It is of the L-head type, with four cylinders cast in block. This engine is very quiet and powerful and, be-

ing built with an unusually heavy crank-shaft, is very suitably adapted to truck work.

Ignition is by a high tension magneto, and a Monarch automatic governor, limiting the speed to 16 m.p.h., is standard equipment.

The radiator shell is cast and is built up and bolted together, combining strength and accessibility. The radiator core is the Perfex honeycomb type. The thermo-siphon system of water circulation is employed.

A Grant-Lees transmission with S. K. F. bearings is used, and final drive is by Torsen internal gear. This axle is very quiet and of great strength, the load being carried on a heavy I-beam forging and the drive is by double reduction through a sep-

arate shaft to the internal gears. All gears and shafts are of alloy steel mounted on roller bearings.

Roller bearings are also employed on the front axle spindles. Ball thrust bearings are used on the steering pivot, making steering easy and lessening wear at a point subject to continual friction.

A three-plate heavy type Borg & Beck clutch, made especially for truck service, is used.

The springs are semi-elliptic, both front and rear, 42 x 2 1/4 in. and 54 x 2 1/2 in. respectively. Heavy artillery type wood wheels are used, having fourteen spokes both front and rear. Two sets of brakes, both internal and external, are set on rear wheel brake drums. The chassis sells for \$1595.

Both service and emergency brakes are internal expanding, those on the two lighter models being 2 1/4 in., each operating inside 18-in. drums, while those on the 3-ton are 2 1/2 in. operating in 20-in. drums. Springs are semi-elliptic all around, those on the 2-ton being 2 1/2 by 40 in. front, nine leaves, and 3 by 54 in., twelve leaves, rear; on the 2 1/2-ton, 2 1/2 by 40 in., 11 leaves front and 3 by 55 in., 13 leaves, rear; on the 3-ton, 3 by 44 in., 10 leaves, front, and 3 1/2 by 56 in., 14 leaves, rear. On the two lighter models the frame is 6-in. channel section and on the 3-ton, 7-in.

Sewell cushion wheels are used throughout. The 2-ton model comes with pressed-on Goodyear S. V. or Goodrich tires, 36 by 4 in. front and 36 by 6 in. rear. The 2 1/2-ton is fitted with Goodrich 36 by 4-in. tires in front and 36 by 7 in., rear. The 3-ton comes with either Goodyear S. V. or Goodrich, 36 by 5 in. front and 35 by 5 in., dual rear.

The steering gear is the Lavigne irreversible worm and split nut type, a 20-in. wheel being fitted to the two lighter models and a 22-in. wheel to the 3-ton.

Equipment consists of open driver's seat, side and tail lamps, tools, etc., and the 2 1/2 and 3-ton models are fitted with Buell whistles. A special Vesta electric lighting system, consisting of generator, battery, two head-lamps with dimmers, tail

Gary One- to Three-Ton Trucks

ALTHOUGH five models comprise the line of the Gary Motor Truck Co., Gary, Ind., the company is concentrating its work at present on the three larger models—the 2, 2 1/2 and 3-ton capacities. Besides these three sizes there are two others—a 1-ton and a 1 1/2 ton, all worm-driven. One description will cover all of the three larger models with these exceptions; engine size, wheelbase, frame and spring construction.

Four-cylinder Buda engines are used throughout the line. The power plant in the 2 and 2 1/2-ton jobs are identical, having a bore of 4 1/4 in. and a stroke of 5 1/2 in., while the engine in the 3-ton model has a 4 1/2-in. bore and a 6-in. stroke. In the 2 and 2 1/2-ton models the gearset is in a unit with the engine, while in the 3-ton it is located amidship. Road speeds of the former two models are limited by a governor on the engine, to 15 m.p.h., while on the latter there is a duplex governor that limits the road speed to 12 m.p.h., and that of the engine to 1200 r.p.m.

Lubrication in all models is by geared pump in connection with the conventional splash system, with an oil level gage on the reservoir and an oil pressure gage on the dash. Cooling is by centrifugal pump and the radiator is mounted on springs

to relieve road shocks and strains. An Eisemann, high-tension magneto furnishes ignition on all models, that on the 2-ton being set spark and on the other two models, automatic advance. Fuel is taken through a Stromberg carburetor, with automatic float feed equipped with hot

Chassis of the Model K Gary. It Has a 4 1/2 x 6 in. Engine Fitted With Duplex Governor.



air attachment, from the tank under the driver's seat. A Raybestos-faced, dry disk clutch is fitted to all models.

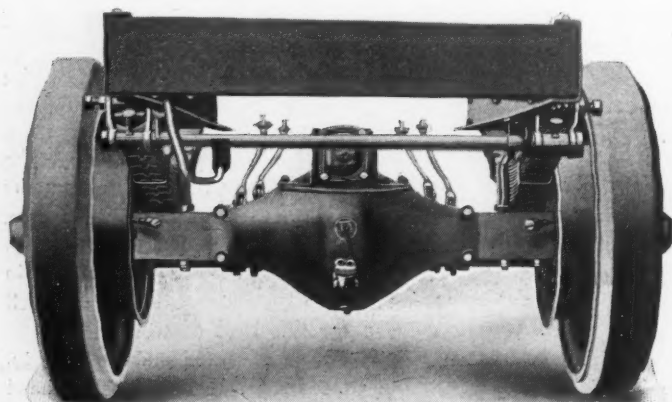
The worm-driven rear axle in all models is the same except that in the larger models it is built heavier. Throughout the line, the semi-floating type of rear axle is employed. In the front an I-beam is used, having nickel steel spindles with large ball-thrust bearings between axle yoke and spindle head.

lamp, gage lamp on dash, with complete fittings, is furnished at extra cost if desired. Special bodies will be fitted to meet the user's individual requirements.

RACINE AUTO TIRE Co., Racine, Wis., announces that it is moving into a new plant which will enable the company to increase its output materially during the coming year.

PHILADELPHIA STORAGE BATTERY Co., Philadelphia, Pa., has opened a distributing branch for its Diamond Grid Battery at 37 Spear St., San Francisco, Cal. A. P. Clark will be in charge of this branch, and C. L. McWhorter, manager of the Pacific Coast Division, will make his headquarters there.

DART MOTOR TRUCK Co., Waterloo, Ia., has appointed three new district representatives. They are: W. A. Baxter, recently with the Maxwell Co., who will have charge of New York State, eastern Pennsylvania and New England; E. W. Brooks, formerly with the Available Motor Truck Co., who will be in charge of the Illinois, Indiana, Ohio and western Pennsylvania territory, and S. B. Knudson, who will supervise dealers in the states of Iowa, Missouri, Kansas and Nebraska.



Rear View of the Model HU, Two and a Half Ton Gary Worm-Drive Rear Axle, and Frame Construction.

Jones Enters the Truck Field With One and Two-Ton Types

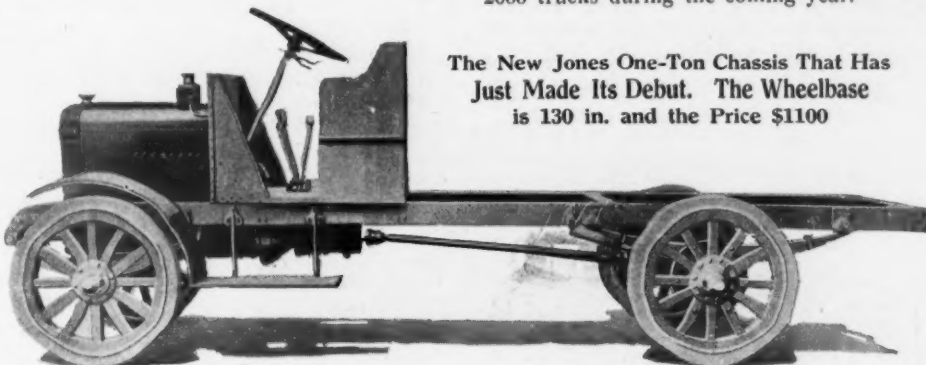
Announcement is made by the Jones Motor Car Co., Wichita, Kansas, manufacturer of passenger cars, that the company will produce both a one-ton and a two-ton truck. President J. J. Jones states that deliveries will be ready February 15th on the one-ton model, and it is expected, although no formal announcement has been made, that the two-ton truck will be on the Market by March 1.

The one-ton Model N will have a four-cylinder, $3\frac{3}{4} \times 5$ in. Continental engine, and ignition is by a high tension magneto. A vertical tube radiator is used. Circulation is by a positive gear-driven, centrifugal pump in connection with a fan mounted on the engine. The loading space will be 9 ft., designed to carry $1\frac{1}{2}$ ft. overhang. Front springs are 44 in. \times 2 in.

with nine leaves. Rear springs are 52 in. \times 3 in., with 10 leaves.

Tread is standard and tires are solid— $34 \times 3\frac{1}{2}$ in. front and 34×4 in. rear.

The wheelbase is 130 in., and the weight of the chassis is 2750 lb. Standard equipment is included and this model will sell at \$1100. Plans are being made to produce 2000 trucks during the coming year.



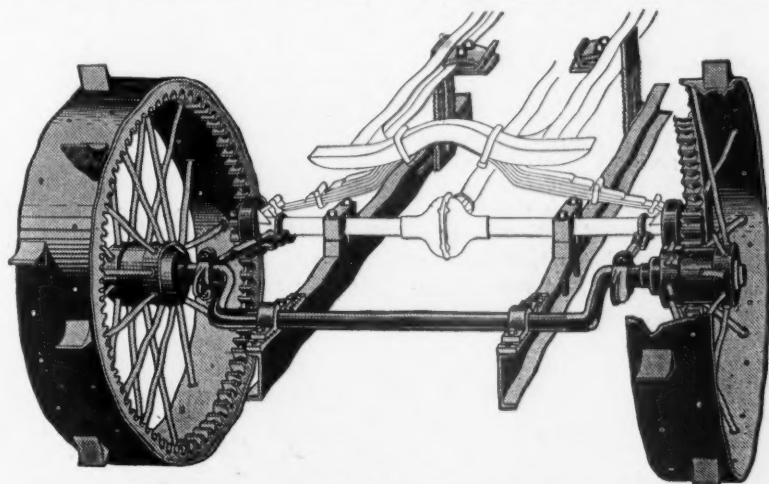
The New Jones One-Ton Chassis That Has Just Made Its Debut. The Wheelbase is 130 in. and the Price \$1100

"Any-Auto Tractor" Attachment Will Fit All Cars

To supply the market with a tractor attachment that is suitable for use with any automobile, the Make-A-Tractor Corp. of America has developed the Any-Auto Tractor. This attachment is said to be easily attached to any car in twenty minutes.

The maker calls attention to several features which aid this attachment in working effectively. A new improved cooling system, including a centrifugal pump and a fan of special design is claimed to cool

of the tractor wheels, strain on the automobile axle or chassis is said to be eliminated. Semi-concave creepers attached to the face of the tractor wheels provide effective traction. Special 10-in. angle creepers are furnished for use on sandy soil. The two sides of the channel frame of the tractor attachment are clamped to the frame of the automobile in such a way as to eliminate the possibility of strain to the frame. A pulley is also furnished which provides the farmer with belt power



Drawing Shows Method of Attaching "Any-Auto Tractor" to All Cars

any car under all working conditions. Another feature is an ingenious air-cleaner which can be attached to any carburetor. This device prevents the dust caused by plowing and the chaff resulting from harvesting, from entering the carburetor and engine.

The rear wheels of the automobile are replaced by two driving pinions which mesh into a big bull gear in the tractor wheel. A speed reduction of 11 to 1 is effected. By applying the power at the outer edge

for the numerous types of farm machinery.

A special driving pinion, effecting a speed reduction which gives 6 m.p.h., is furnished for road work in hauling loads to town.

The drive wheels are 36×10 in. The Make-A-Tractor Corp. of America claims that tests made with the Any-Auto Tractor attachment on various cars show a working ability of from 4 to 8 h.p. An appreciable saving in time and better grade

of work result. The offices of the Make-A-Tractor Corp. are located at 2700-2702 Michigan Ave., Chicago, Ill., where the company's exhibit will also be staged during the Chicago Show.

Another Step in "Safety First" Travel

Perhaps the solution of the skidding problem may be found in a non-skid road surface. One of the factors in the skidding process has already received a great deal of attention. We are quite familiar with non-skid automobile tires and chains, which lessen the danger of skidding, but up to the present time, the road itself has been little considered. It is a well-known fact that asphalt, brick, concrete and water- and tar-bound macadam roads are particularly slippery in wet weather, and that ice and sleet render them almost impassable in winter.

An experiment is being tried in the mountainous district of Western Maryland upon a tar-bound macadam road with a water-bound macadam foundation. Several grades of tar binder as a surface treatment had been previously used, but under heavy rolling and continued traffic the binder had flushed up through the stone chip covering, making a smooth surface which became very slippery when wet. This year a special grade of Pontar was used on the surface as a binder, and it is hoped that a non-skid surface has resulted. Up to the present time, results have been very encouraging, as the binding material used has not flushed up under the roller and traffic, as have previous treatments. This has proven of great benefit under wet weather conditions and has materially reduced the skidding of automobiles and trucks. If it proves as efficient under winter weather conditions, a great saving will be effected in tires, as well as a saving in lives through the prevention of accidents.

New Cooling System on Feeney Tractor-Forming Unit

THE most important feature of the Feeney tractor attachment for Fords is a newly evolved method of cooling. To compensate for the loss in air circulation due to the greatly decreased speed of the car when used as a tractor, a system of evaporation is used to regulate the heat. To accomplish this, the evaporation surface is so disposed throughout the Ford radiator

cooling system. Distributing leaders that distribute the water equally through the coils are placed in this metal case which is shaped like an inverted funnel. Water distribution is accomplished by gravity, capillary attraction and the draft of air from the fan.

An auxiliary tank with a capacity for 6 gal. is placed under the hood on the rod that runs from the radiator over the en-

ally across the face of the wheel and then extend 3 in. over the outside edge at right angles to the rim of the wheel. A 2-in. axle carries these wheels, using a 12-pin roller bearing on the hubs where it is encased from dirt and held in place by hub caps.

Power is transmitted from the Ford axle through a roller pinion to a large bull gear on the wheels. This gear is in six sections. Different size roller pinions give ranges in speed. Spacing arms allow adjustment for the different size pinions. The frame of the attachment is clamped to the Ford frame and is designed to operate as a lever so that the weight of the rear of the Ford is supported at the axle housing. The entire addition has the character of a floating unit and "pushes" the Ford car before it, taking its power from the roller pinion. Sufficient traction is secured by building the attachment to weigh 900 lb. A speed of 2 to 2½ m.p.h. is given.

This cooling system and tractor attachment are manufactured by the Feeney Mfg. Co., Muncie, Ind. National distribution is in the hands of the Farmers' Tractor Co., Chicago, Ill.



Demonstration of the Feeney Tractor Attachment and Cooling System for Fords

that it is in immediate contact with the small tubes through which the cooling liquid circulates.

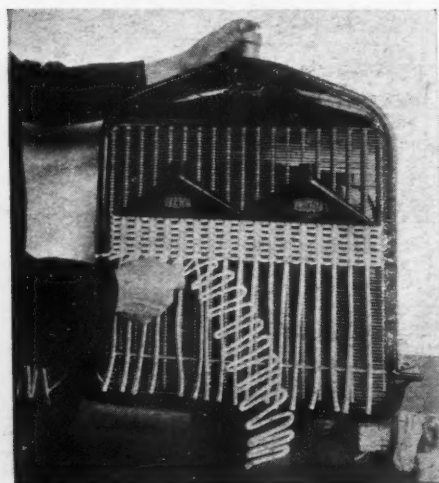
Evaporation coils covered with a specially prepared fabric, ¼ in. thick, of proper size and loop, are fitted into spaces between the rows of water tubes and also in the spaces between the radiating fins which run horizontal in the radiator. These loops are claimed to be easily and quickly shoved into the radiator from both the

gine to the instrument board, and supplies the cooling coils with the necessary water for evaporation. Copper tubes carry the water from the tank to the distributor and the flow is controlled by pet cocks. The water flowing through these coils absorbs the heat of the Ford radiator liquid and then drips, with its absorbed heat, out onto the ground. The supply of water in the auxiliary tank is said to last from one-half day to 1 day, depending on the volume fed through the pet cocks. This system of cooling is reported to be performing very satisfactorily and may be the solution of the cooling problem in Ford tractor attachments.

The tractor attachment has the conventional design and includes two traction wheels, 30 in. diam., 10 in. face, each equipped with 10 lugs. These lugs run diagon-

The Rear Assembly and the Heavy Radiator of the Auto-Tractor Attachment.

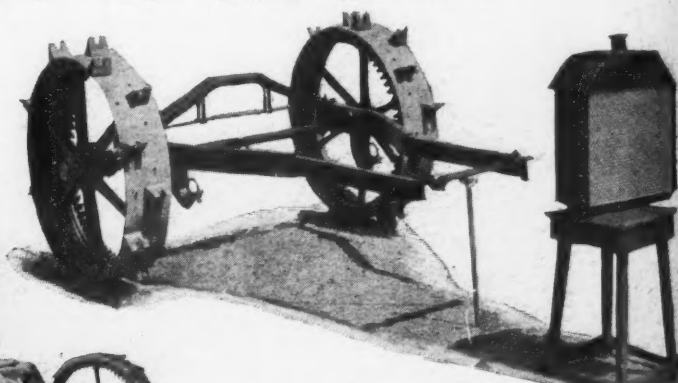
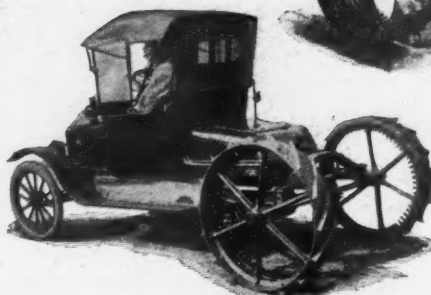
La Fayette Auto-Tractor and a Ford



Attachment of the Feeney Cooling System

front and back. The natural spring of the brass wire core of the cooling loops holds them properly in place.


Directly above the loops is what is called a "water distributor." It is metal and is easily attached to the front of the radiator through a predetermined space which is designated in directions that accompany the



The La Fayette attachment sells for \$225, f.o.b. factory. It is painted in two colors. The parts that remain permanently on the Ford car are black; those that are removed are red. The Ford car with the Auto-Tractor is a 2-plow outfit.

Firestone

Truck Tires



THIS Firestone Giant Truck Tire with the grooves is the only equipment you can get that will keep your big trucks going through the worst conditions that winter can bring.

It negotiates snow drifts, mud holes, sleet, as a tire was never known to do before.

It saves tire money, fuel and truck repairs. Sizes, 8" wide to 14" wide. Investigate. The records are really surprising.

FIRESTONE TIRE & RUBBER CO.

Akron, Ohio

Branches and Dealers Everywhere

What the Motor Car Industry Means to the War

By ALFRED REEVES*

IN connection with the automobile manufacturers' offer to serve the Government in any way possible, it is interesting to observe the kinds of service the motor car is supplying and can supply in the present national crisis. Washington officials are realizing more and more that the present war is depending upon the motor car industry in as many and possibly in more ways than upon any other industry in this country.

Armies at the front and in the training camps are supplied with food, clothing, ammunition and all other necessities by motor trucks. The armies in Europe are already using 100,000 motor trucks in transportation service. The United States Army expects to call for 100,000 trucks for the coming year.

Many thousand motor ambulances are used for removing the wounded from the battlefields.

Paris was saved from invasion by rushing an army of 100,000 French troops in motor cars, omnibuses and taxicabs from behind Paris for the battle of the Marne. Verdun was saved by hurrying up ammunition and supplies in motor trucks when no other transportation would suffice.

British "tanks" made the break in the German line that resulted in the victory at Cambrai. These tanks are caterpillar motor tractors, a type of farm tractor developed in America.

Motor tractors are used for hauling heavy guns.

Armored motor cars have been used with success against rifle and machine gun fire.

Many types of special motor cars are used in army work. They include cars and trucks equipped with wireless apparatus, motor searchlights, motor kitchens, motors mounting anti-aircraft guns, motor-driven emergency hospitals, motor trucks for erecting telephone and telegraph lines, etc.

Motorcycles are employed almost altogether in the war for dispatch carrying.

American automobile engineers and factories developed the Liberty airplane motor, which will be built by tens of thousands in American automobile factories next year by the standardized quantity productive methods developed in this industry. It is believed these airplanes will materially help to win the war.

American automobile engineers and factories also developed the standardized United States Army motor trucks and will build many thousands during the coming year. It is only through the standardized production methods developed in the industry that it is possible to manufacture these army trucks in such large numbers and to have the parts in all of them interchangeable. This interchangeable feature will enormously reduce the number

of replacement parts that the Army will have to carry in stock at the repair depots.

It was the automobile business that made the airplane possible. The automobile manufacturers encouraged the steel manufacturers to evolve special alloy steels that were extraordinarily strong and light and high-speed tool steel for working these hard, tough metals.

The automobile industry also developed the high-speed gasoline engine that has been adapted to airplane and motor boat work.

The use of motor trucks made it possible to construct the sixteen National Army cantonments in record time. They hauled most of the material used in erecting the buildings at these cantonments.

Manufacturing facilities of the motor car industry are sufficiently extensive to produce most of the materials required by the Army with the exception of food-stuffs. Leading motor car companies are already extensively engaged in manufacturing not only motor trucks, motor cars, ambulances and tractors, but are also producing on a large scale gun caissons and parts, recoil checks, mine anchors, shells, etc. It is entirely feasible for them to make steel helmets, all sorts of forgings, stampings and castings, tents, wagon covers, and innumerable other articles of metal, cloth and wood. The rubber tire companies have begun making gas masks and have been making fabric for airplanes and balloons for some years.

In response to the call of the Railroads' War Board, motor trucks are rapidly coming to the relief of the railroads in their present critical state of congestion, to care for all short-haul freight traffic in and around cities up to distances of 25 to 50 miles. This will enable the railroads to clear the tracks and particularly the terminals for through freight of utmost importance, such as coal, sugar, ore, iron and steel, grain, necessary foodstuffs of all kinds, munitions and other Army supplies and troops. Taking over of short-haul work by motor trucks will release many locomotives, cars and train crews for long-haul work.

Army trucks are going to be delivered from the factories where they are built to the seaboard for shipment abroad over the public roads under their own power. They will make the trip loaded with spare parts and supplies and will be manned by the Army motor truck crews that will handle them on the other side. Thus, they will avoid the use of many thousands of freight cars and hundreds of locomotives.

Officers, automobiles, ambulances and motorcycles for courier service and machine gun batteries can also be delivered by road if desired.

Should any eventuality arise, such as the blockade of a railroad, to make it necessary, the thousands of soldiers at any of our camps or cantonments could be moved

rapidly by a concentration of thousands of privately owned touring cars of our citizens, and their entire equipment could follow in private motor trucks.

The 4,000,000 automobiles and 400,000 motor trucks and delivery wagons in use in America are a tremendous resource. They are time-saving and labor-saving machinery that enables more work to be done in a given time by fewer men and horses. Man power is scarce and high-priced and horses and mules have been shipped abroad for army use at the rate of half a million yearly since the war began. **Motor cars are a necessity to the farmer and motor trucks are equally necessary to manufacturers and merchants who have found it imperative to bring materials long distances by truck and make long distance deliveries to avoid railroad freight embargoes and other rail delays.**

Not Wasting Their Trucks

John F. Rausch, a fancy baker, in Syracuse, has adopted a definite plan of limiting deliveries, a method of economy which the Retail Grocers' Association has considered and discarded because such an arrangement, they figured, might lose them the trade of a good customer. Rausch, however, treats his good customers all alike, and considers all good whose orders warrant delivery.

An ice cream order is the basis of this baker's delivery system. He will not send out his car with less of an order than a quart of cream at 50 cents. If the family to which the cream is going, or a family in the flat above, happens to want a loaf of bread or a dozen cakes, this little order may go along. But if the family which wants the bread or cakes lives a block or two farther away, or off the route of the ice cream delivery, the bread and cakes must be called for.

Mr. Rausch uses two Ford cars with top delivery bodies, and says he would never return to the use of horse vehicles. Deliveries are much more dependable with the cars, he says, and besides, the man on delivery is not away from the store so long. Mr. Rausch had three one-horse rigs two years ago, and in May of 1916 he bought a Ford and disposed of two of the horses. The business continued to increase, and in May of 1917 he disposed of the last horse and bought another car. He says one light delivery truck is easily equal, in his business, to two horse rigs, and he keeps the cars spick and span, and this, he says, is easier to do with automobiles than with horses and wagons.

John Revoir, who makes a specialty of fancy fruits, has adopted a principle of delivery similar to that which Rausch follows. Revoir will not make a delivery beyond the mile circle for an order of less than \$1, and after 5 P. M., although the store is open to 11, he will not deliver at all. Revoir has only the one truck, a Ford, with a delivery top, but he keeps it looking well for the sake of the advertising—and its use is productive, and not only an "overhead."

* General manager of the National Automobile Chamber of Commerce.

Ross Gears

WHITE with age, but with a heart still young and body unwearied, Nineteen Seventeen comes to the end of his task, and, with eager confidence, Nineteen Eighteen takes the wheel. He knows that the Ross Steering Gear which made last year's labor lighter will likewise make it easy for him to steer the old world for the twelve months to come.

*The Steering Gears that Predominate
on Motor Trucks*

have won this high place by the easy steering, safety and reliability which are guaranteed by ROSS design, and by the highest quality in materials and workmanship. One hundred and fifteen motor truck manufacturers, representing considerably over half the entire industry, use ROSS GEARS as standard steering equipment.

*Write for new catalog and any special
information desired*

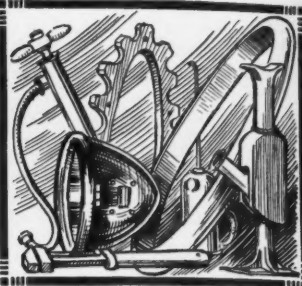
Ross Gear & Tool Company
760 Heath Street Lafayette, Indiana



When Writing, Please Say—"Saw Your Ad. in the CCJ"



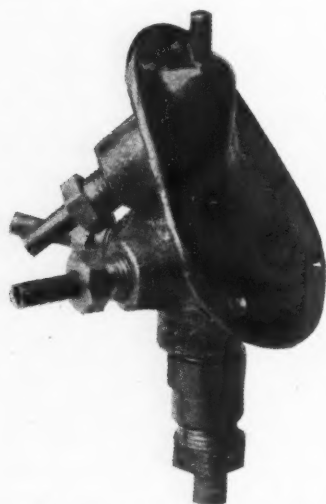
TRUCK ACCESSORIES AND APPLIANCES



Oil Distributed and Circulation Indicated by New Device

An oil circulation indicator and distributor for automobiles, trucks, tractors and engines is being marketed by F. Janusch, 511 Roscoe St., Chicago, Ill. Models Nos. 25 and 32, each weighing 1 lb., are being marketed at present.

These models, which are connected with the oil pump discharge, are equipped with simple flared-tube joint nuts. They are complete to receive the inlet and outlet



Janusch Oil Indicator and Distributor

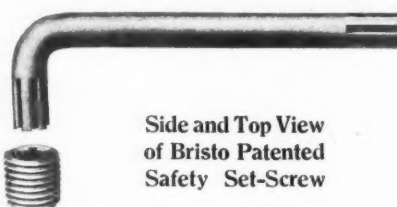
tubes of the car oil discharged while pressure from the oil pump raises the oil circulation piston and uncovers one or more outlets, forcing its way to the place to be lubricated. Oil can be distributed in large or small quantities. When the piston is raised by the oil, the upper end, which is nickel plated, creeps out of the housing about $\frac{3}{8}$ in. with very small oil circulation. As the circulation is increased, the end of the piston emerges further from the housing. It disappears when circulation ceases. The topmost outlet shown in the illustration carries leakage from around the piston back to the pump. It is said the device, which can be mounted on the toe or instrument board, remains clear, and is positive in action.

Bristo Set-Screws Safer

Bristo Safety set screws are made at the factories of the Bristol Co., Waterbury, Conn., manufacturers of recording and indicating instruments.

As projecting set screws on revolving machinery are illegal in twenty states, Bristo screws have been designed to elim-

inate the projecting head. The fluted design of both the screw and wrench cause the steel, of which they are constructed, to contract instead of expand when pressure is exerted with a rotary motion. Great force can be used without causing the head of the screw to spread or crack. A



Side and Top View
of Bristo Patented
Safety Set-Screw

special heat treatment makes the screws very hard on the surface, yet tough at the core.

Removal of the screw is easy, it is said, because when pressure is exerted in removing it, the steel again contracts. The difficulty of removing broken set screws is eliminated. The screws may be used over and over again without injury. Special wrenches are used.

Flexo New Core Radiator

A radiator for which many advantages are claimed is being manufactured by the Auto Radiator Manufacturing Corp., 219-225 W. 12th St., Los Angeles, Cal.

The manufacturer of the radiator claims that it is the only one of its kind, for it can



Flexo Radiator and Section of Core Bent

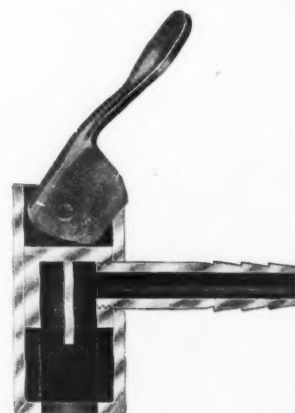
be frozen solid any number of times, is easily repaired, and has the largest water passages of any cellular core type. The radiator has a combination thin and wide water travel and the water in circulating forms little eddies, making the tubes self

cleaning. The radiator can stand an air pressure of 100 lb.

The Flexo is made of copper, plated with tin, and is soldered $\frac{3}{8}$ in. deep at every point of contact. The metal, it is said, will not stretch nor draw and there are no sharp corners to break or crystallize. The Flexo radiator is manufactured for any type of car.

Thumblock Couples Pump and Tire Valve in Positive Way

The Thumblock pneumatic pump coupling is being marketed by Weber & Doyle, Inc., 152 Nicolet Ave., Detroit, Mich. It is permanently attached to the flexible pump hose. To couple the hose to the tire valve, the body of the coupling is slipped over the valve—a pressure of the thumb on the small lever locking it in place. The makers



Sectional View of the Thumblock Coupling

claim that the coupling cannot be blown off. In removing, it is only necessary to raise the lever.

The simplicity of the device and the few parts used in its construction insure a long life. A small cam, attached to the lever, forces down an interior shell which is then compressed by the cone formed by the interior of the containing shell, thereby gripping the tire valve.

Damaged threads on the valve stem are precluded and quicker service in the garage is afforded. The price is 35 cents each.

BEARINGS CO. OF PENNSYLVANIA, with headquarters at 684 N. Broad St., Philadelphia, Pa., has assumed the selling agency and jurisdiction over the service of Rudge-Whitworth wire wheels in the cities of New York, Philadelphia, Baltimore and Washington.

Velie

WORM GEAR DRIVE

Trucks

Make Good - *Everywhere!*



EVERYWHERE that stamina, power and dependability are needed in accomplishing Herculean tasks—there you find Velie Biltwell Trucks, making good. Proven successful in building big business, they are the choice of farsighted business men in all lines. Constant, dependable, economical service, such as the Velie Trucks give, is the practical way to reduce hauling costs.

Velie Trucks are giving faithful service to the government, here and abroad, and have been used on the European battlefields from the beginning of the war.

Velie capacity and dependability are insured beyond all doubt by heavy-duty Continental motors; Timken-David Brown worm and gear drive; four-speed transmission; steel Raybestos clutches; Timken bearings throughout; removable tubular radiators; extra heavy pressed-steel frame; heavy silico-manganese steel springs; large wheels and the Velie large, powerful brakes.

Driver's cab, gas headlights and Prest-O-Lite tank are included besides regular lighting equipment.

Write today for booklets and complete particulars.

Velie Motors Corporation

119 Velie Place

Moline, Illinois

Builders of Automobiles, Motor Trucks and Tractors



1½-2-Ton Capacity, \$2750
3½-4-Ton Capacity, \$3600

When Writing, Please Say—"Saw Your Ad. in the CCJ"

"Handy" Terminal for Cables

A. E. Francis, known to the racing world as "Smoky" and to the accessory trade as president of the Francis-Rand Co., Cleveland, O., has recently patented and placed on the market a terminal that is claimed to eliminate all terminal troubles.

Mr. Francis found the need of such a terminal while in the racing game, it having been his experience to have lost an im-



"Handy" Terminal Attached to Plug

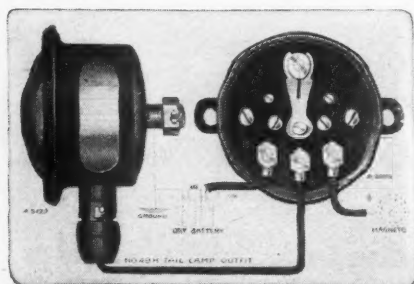
portant race because of loose connections. He also knows what it is to fish a terminal nut from an oily crankcase and to have his fingers burned in loosening the terminal nut.

The Handy terminal has jaws threaded on the inside to engage the threads of the spark-plug center-bolt. One motion raises the ring, compresses the steel spring, releases the terminal and lifts it from the spark plug. There are no nuts to tighten or loosen. No tools are required. The ferrule is fitted to the cable and the stripped wire firmly held by a copper clip, making a non-soldered connection. It is made in three sizes to fit every make of spark plug. The device sells for 25 cents.

Electric Tail Lamp for Fords

The Corcoran-Victor Co., Cincinnati, Ohio, is marketing a new type 49-H plain and a 49-L indicating single-bulb electric tail-lamp outfit for Ford cars.

The equipment will operate on either a magneto or a dry-cell battery, and requires but a single wire system. This makes it



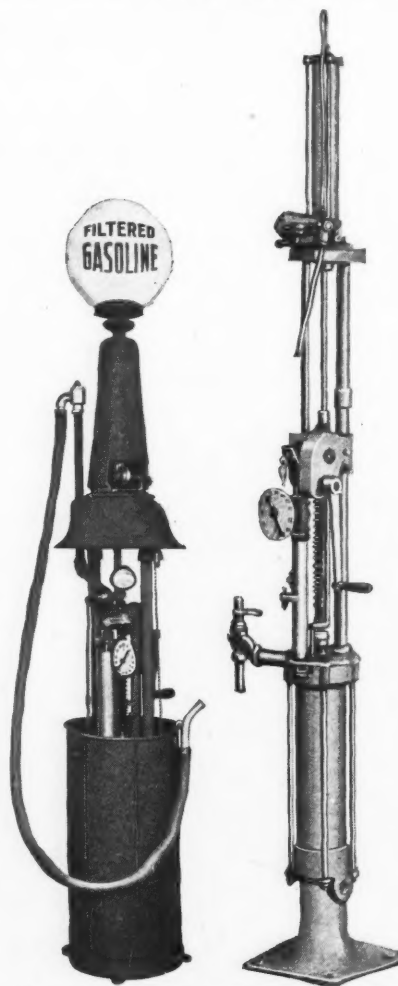
New 49-H Tail Lamp Outfit of the Corcoran-Victor Company

inexpensive and simple to attach. The bulb used is a single 2-3 volt, 2-c.p. type. The 49-L type has a self-contained signal lamp in series with the tail lamp so that the driver knows when the tail lamp is lighted. The switch is constructed so that should the indicating bulb burn out, the

lever may be moved over one point to enable the tail lamp to continue burning. The 49-H type has a switch for lighting the lamp either from a dry cell battery or a magneto without the special signalling device. It sells for slightly less than the 49-L type.

Inglis Automatic Fuel Pump

The Inglis automatic air-hoist gasoline pump, a product of the Inglis Mfg. Co., 283-285 Fifth Avenue, Milwaukee, Wis., is designed to dispense gasoline in quantities very quickly. The gasoline is forced from the storage tank through the discharging hose by compressed air under 30 lb. pressure. A reducing valve and pressure gage enable the operator to reduce the air to that pressure from the 150-200 lb. ordinarily used in inflating tires. A 1/8-in. pipe connects the air tank to the pump. The plunger rod of the air hoist is connected directly to the rack of the pump. All gears and racks of this pump, which is said to have been approved by the National



Two Models of Inglis Automatic Air-Hoist Gasoline Pumps

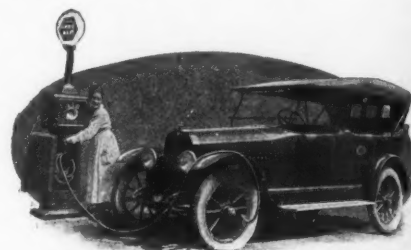
Board of Fire Underwriters, are machine cut, no castings being used. Prices of the various models can be had upon application.

Ahlberg Bearing Co., Chicago, Ill., has been appointed a distributor of annular ball bearings under the Conrad patents by the Hess-Bright Mfg. Co., Philadelphia, Pa.

A Free-Air Curb Station

The Black & Decker Mfg. Co., 105-115 S. Calvert St., Baltimore, Md., is offering an automatically operated tire inflator tank outfit for automobile free-air service. This outfit starts working immediately on turning the switch, and will continue until the pressure in the tank reaches 150 lb., when an automatic pressure switch stops the machine.

The pressure dial in the upper front door is lighted by a lamp concealed inside the cabinet and the tire valve connector on



One of the Free-Air Stations in Use

the end of the hose is arranged to allow the pressure in the tire, before starting to inflate, to be registered on the dial. The upper compartment is kept locked and contains a standard No. 2 Lectroflator. The lower compartment, also provided with a lock and key, is normally left unlocked and contains 25 ft. of triple-braided hose and a rack for holding it when not in use.

Over the hose rack is placed the electric switch for starting and stopping the Lectroflator when the large dial registers the desired pressure. When enough air has been used to cause the pressure in the tank to drop to 120 lb. an automatic switch starts the device again and brings the pressure back to 150 lb.

The outfit has no exposed mechanism, electrical or mechanical, so that no one can be injured through coming in contact with moving armatures, gears, rods or shafts. A cover is furnished for the automatic switch that completely encloses all mechanical and electrical parts. These machines can be used on a 110-volt, direct or alternating current of from 25 to 60 cycles. They are 8 ft. high, with a base 14 x 24 in. and a shipping weight of 470 lb. The prices are \$200 and \$203, depending on the voltage.

A Hood Fastener With a Rubber Bumper

The Ideal Brass Works, Indianapolis, Ind., has placed on the market a hood fastener made entirely of sheet metal, with various types of bases, and nickel or black enamel finish.

The feature is a thin rubber bumper attached to the lower end of each fastener, which keeps the side panel of the hood from rattling.

The list price of the black-enamelled type with the bumper, per set of four, is 80 cents; without bumper, 60 cents.



No Matter Where You're Located United States Tires Are Within Reach!



Glance at this list—Each city represents a United States Branch Office, Service Station and Supply Depot; to furnish tires to you.

You can readily see that no matter where you're located, you're not very far from a United States "Help Shop."

United States Tire Company

GENERAL OFFICE—Broadway at
58th Street, New York

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Fort Wayne, Ind.	Sioux City, Ia.
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Pacific Coast General Office
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Great Falls, Mont.	San Francisco, Cal.
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Portland, Ore.	Tacoma, Wash.
Sacramento, Cal.	

Every Representative is an Expert on Truck Tires

Another thing. It's a matter of policy with us to see that our men, all down the line, are "practical fellows." They Know, or they can't "pass muster." They've got to know.

This means a lot to you.

It means you can take up any kind of solid tire problem with any U. S. man and you can follow his advice with assurance that it's good advice.

UNITED STATES TIRE COMPANY

1790 Broadway New York

McQuay-Norris Superoyl Ring

After three years of wide experimentation the McQuay-Norris Mfg. Co., of St. Louis, is putting on the market a special ring, designed and manufactured for the correction of oil trouble exclusively.

It has been named the McQuay-Norris Superoyl ring and is designed to occupy the top groove of each piston solely as an oil ring; to keep excess oil out of the combustion chamber. Probably no piston ring problem in the last several years has bothered engineers, dealers and garagemen alike as much as the increase in oil troubles.

Fouled spark plugs, smoking exhausts and carbon deposits have increased markedly with modern engine construction. Much of this is due to the over-powered



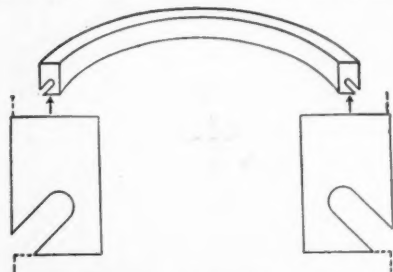
The McQuay-Norris Superoyl Ring

engine and the manner in which it operates most of the time. They run under only partially open throttle with resultant high vacuum, low explosion pressures and low compression so that abnormal oil conditions are produced. It is to control oil troubles in such engines that McQuay-Norris Superoyl rings are being manufactured and marketed.

While stating that this ring will hold compression as well as it is possible for any well-made one-piece ring to do, its manufacturers state that it is a special ring for a special purpose—the control of excess oil—and recommend its installation in conjunction with McQuay-Norris Leak-Proof piston rings.

The McQuay-Norris Superoyl ring is a concentric ring with an oil reservoir which collects all of the excess oil from the cylinder walls on each down stroke of the piston. Just the film necessary for lubrication is left. The position and shape of the oil reservoir is the exclusive McQuay-Norris Superoyl design. It is not a mere groove in the face of the ring.

This reservoir is cut into the ring with mathematical exactness at an angle of 45 deg. from the intersection of the cylinder



Sectional Views of the New Superoyl Ring, Showing the Oil Reservoir

wall bearing face of the ring and the ring's lower groove bearing face. This is clearly illustrated in the cross section cut accompanying this article. This makes a scraping edge of the lower end of the ring which forces the excess oil in the reservoir along its upper surface.

The oil cannot, while it is being scraped into the reservoir, strike against the lower groove bearing of the ring, where it could creep into the groove and around the ring

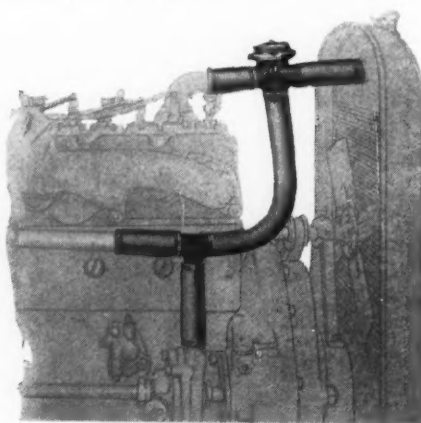
into the combustion chamber, because the lower edge of the reservoir terminates at a point slightly inside of the piston's outer surface. The oil is constantly kept building up against the upper wall of the reservoir until the down stroke is completed when it is emptied again over the lower rings.

It is only by placing the oil reservoir exactly at the intersection of the ring's two bearing faces—the cylinder wall and the lower groove—that this action can be produced, it is asserted by the maker. A groove or recess in the ring at any other position, it declares, does not make it impossible for the excess oil, which is always under pressure on the piston's down stroke, to be forced under the ring and into the groove to work its way around the groove and then out into the combustion chamber. The ring is covered by patents and the trade-mark Superoyl is registered in the United States Patent Office.

Rayfield Thermostat Introduced

The Rayfield Thermostat is a new device to regulate the water circulation between the radiator and engine, and cause the water around the cylinder to be heated to a proper temperature in from 2 to 4 minutes, this heat being retained in the engine block regardless of the temperature of the water in the radiator. It is offered by Findeisen and Kropf Mfg. Co., of 21st and Rockwell Sts., Chicago, Ill.

When starting with a cold engine the small quantity of water around the cylinders is heated quickly, and when it reaches a temperature of about 170 deg. F. it automatically discharges into the radiator, and



The Rayfield Thermostat Installed

this hot water is displaced by water from the radiator. This process continues automatically, retaining a constant efficient temperature in the engine.

The Rayfield Thermostat is different in operation and construction than other devices of its kind on the market. It stops the circulation in the engine block but does not prevent circulation in the radiator at any time.

With the low grade fuel now in use it is impossible to secure economy and efficiency unless a high temperature in the engine is maintained. With a cold engine it is necessary to use a richer mixture, which results in a waste of fuel. Under such conditions a quantity of the fuel escapes by the pistons into the crankcase,

due to improper vaporization. By running with a hot engine the fuel is properly vaporized, resulting in perfect combustion at all times. Such a condition results in a great saving of gasoline, oil, and repair bills, and all disadvantages of running a car with a cold engine are eliminated.

While running with a cold engine the unvaporized gasoline passes into the crankcase, which destroys the efficiency of the lubricating oil, making it necessary to replenish the supply frequently. By using the Rayfield Thermostat the engine is operated at a high temperature at all times, therefore all of the fuel is consumed.

This thermostat reduces repair bills by preventing carbon formation on spark plugs, valves and pistons. By preserving the quality of lubricating oil in the crankcase the destruction of bearings, scored cylinders, and other troubles arising from lubricating oil being mixed with unconsumed gasoline, are prevented.

The Rayfield Thermostat is an improved type of exclusive design, simple in construction and easily installed. It is adaptable for use on any engine, pleasure car, truck or tractor having pump circulation.

A-C Carbon-Proof Spark Plug

The Champion Ignition Co., Flint, Mich., is putting out a new spark plug known as the A-C Carbon-Proof. It was designed to overcome the carbonizing trouble experienced when kerosene is used as a fuel. The plug was first made for use on a trac-



Sectional View of New A-C Carbon-Proof Spark Plug.

tor, but was found to be suitable for automobile engines and is now made for Ford, Overland and Studebaker cars.

Carbonizing is prevented by providing the carbon-proof porcelain with a number of ribs having saw-tooth edges, which are said to attain a sufficiently high degree of heat to burn away the carbon, thereby keeping the edges clean and preventing short circuit.

LANDOVER MOTOR TRUCK Co., Chicago, Ill., has taken a 3-year lease on the former plant of the Marinette Iron Works, with an option to purchase at the end of a year. The Landover Co. has completed the removal of machinery from Chicago to Marinette, Wis., and the plant is now in full operation.



MORELAND TRUCKS
for U.S. ARMY
Equipped with
Smith Wheels
"EVERLASTING"

YOUR TRUCK or Uncle Sam's—any capacity from One Ton to The Limit—will Run Easier, Last Longer and **DELIVER FAR GREATER MILEAGE** from **TIRES** and **GASOLINE** when equipped with **SMITH WHEELS**.

Moreland have made Smith Wheels standard equipment for their 1½, 2½, 4 and 5-ton models

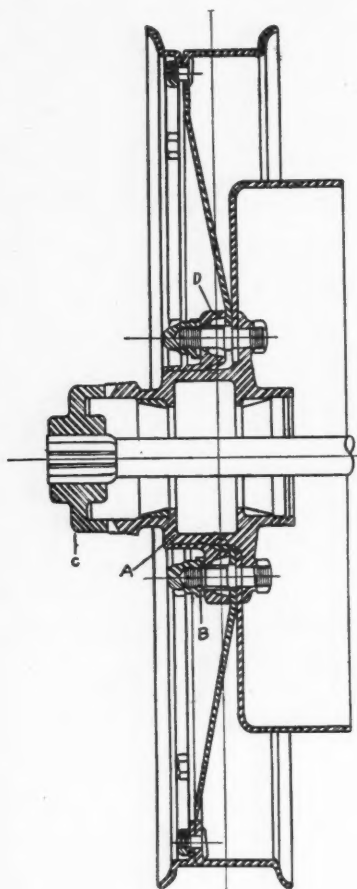
Smith Wheels guaranteed **FOR LIFE OF TRUCK** on which originally placed

Insist on Smith Wheels every truck you buy!



Disteel Spokeless Wheels

An announcement of interest to the trade is that of the Detroit Pressed Steel Co. of Detroit, Mich., introducing its new product—Disteel wheels—which the company is now marketing. The advantages claimed for Disteel wheels are as follows: They are easy to keep clean, operating strains are evenly distributed; unsprung weight is reduced; weight is centered at the hub; road shocks are taken indirectly; the load



Section Through a Disteel Wheel—Shown Applied to a Full-Floating Axle

Referring to the letters: A is the hub; B is the removable flange nut; C is the axle-shaft drive flange, and D is the removable hub flange.

is carried both in suspension and compression; the wheel is easy to demount at all times, and tire changes are easy under all conditions; all parts are constantly tight, eliminating squeaks. With the disk and rim of this wheel a unit, both made of a metal having uniform extension and compression, the wheels are said to remain perfect circles under severe conditions. By mounting the wheel with the concave face outward, the possibility of damage due to collision is lessened.

The wide section of the rim is integral with the disk on this wheel. To remove the outer ring it is necessary to loosen 11 nuts with a sprocket wrench on the 34-in. wheel. When this is done, most of the work has been accomplished and the tire is then easily removed from the wide section of the rim. The rim construction is said to permit the removal of the tube or casing in a very short time and with little physical exertion. There are no grips

or grooves at the side of the rim to catch or hold the tube.

The pressure exerted by the inflated inner tube combined with the force brought to bear by the rim nut acts to clamp the two sections of the rim firmly to the disk and makes possible the use of a much thinner disk than would otherwise be possible.

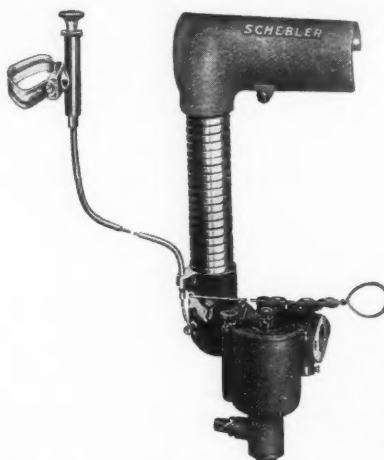
The permanent hub flange has four studs which engage with holes in the wheel disk and act as drivers, also holding the wheel tightly, when the wheel locking flange is put on. Disteel wheels are claimed to keep perfect alignment at all times, by reason of the rims being in unit with the wheel.

These wheels are made for cars having full-floating, semi-floating or three-quarter floating rear axles, and, of course, for all front axles.

Schebler Ford Carburetor

There are no moving parts in the new Schebler plain-tube carburetor for Fords. Several new and improved features are claimed to be incorporated in this carburetor. The pivot tube principle is used, which is an improved type of gasoline nozzle designed to furnish a rich mixture for acceleration which is then gradually thinned out as the engine approaches its normal speed. An economical running mixture as well as a smooth and positive acceleration is said to be the result.

The use of the pivot tube or nozzle obviates the necessity of using complicated moving parts. The Schebler "Ford A" car-



New Schebler for Fords With Dash Choker

buretor has no parts to wear or get out of adjustment.

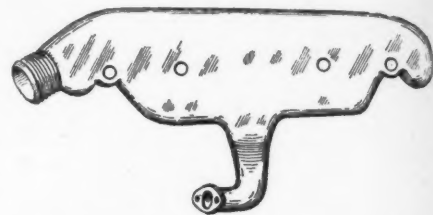
A low-speed and idling, and a high-speed gasoline needle adjustment are furnished. A double choker is provided so that the engine may be easily started under all weather conditions and the mixture controlled from the driver's seat.

The complete outfit includes a carburetor, a steering column control, a hot air drum, flexible tubing, a manifold gasket, two $\frac{3}{8}$ x 16 cap screws, and radiator choke wire. The price, complete, is \$17.

This is the first model of the plain-tube air-valveless carburetors to be offered. It is to be followed by both vertical and horizontal plain-tube carburetors for various engines.

Manifold for Ford Cars

Dallas Auto Device Co., 1013 Elm St., Dallas, Texas, is offering the Double Mileage Manifold, a device claimed to greatly increase the thermal efficiency of the gasoline supply. It is an admitted fact that a portion of gasoline goes out through the



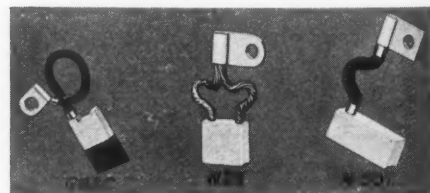
Double-Mileage Manifold for Fords

exhaust, wasted, and this is particularly noticeable when the engine is cold. When the engine is warmed and the carburetor is properly adjusted, better results are obtained. This principle is pursued in the Double Mileage Manifold by special arrangement of the exhaust and intake manifolds in a one-piece gray casting. By using this integral manifold, it is claimed that particles of gasoline in the forms of globules are broken up into a finer mixture of gas and oxygen, and enter the cylinder in a more combustible state.

The Double-Mileage Manifold takes the place of the regular intake and exhaust manifold and is bolted on to the engine with the same lug bolts. Being a one-piece casting, with no movable parts, makes it possible for any owner to install this manifold in a short time and with the necessary use of only a monkey-wrench. The Double-Mileage Manifold is made at this time only for Ford cars, and the price is \$10.

New Brushes for Starting and Lighting Generators

The Becker Bros., Inc., 23-25 N. Jefferson St., Chicago, Ill., have added several new brushes to their line of starting motor



Three New Electric Generator Brushes Added to the Becker Brothers' Line

and lighting generator brushes. These brushes are made of standard materials, such as, copper, gauze, metal graphite, and carbon, and are guaranteed to give satisfactory service.

In the illustration are shown Types G-23, G-24-C and N-50-T. The prices of these three types are \$.70, \$.60 and \$1.45, respectively.

VESTA ACCUMULATOR Co., Cleveland, O., has removed from 1907 Euclid Ave. to 1801 E. 21st St.

Does your truck give "17000 miles service at no repair cost?"



GENERAL BAKING COMPANY

CORNER CLINTON AND ADAMS STREETS
COLLINS BAKERY BUFFALO NEW YORK

November 30th, 1917.

Atterbury Motor Car Co.,
Buffalo, N. Y.

Gentlemen:-

It might interest you to know
that our Atterbury 2-ton is delivering
Bond Bread to thirty miles away—
all night.—every night—and is giving
us a half day's good service here in
town, in addition.

With practically no repair
cost, our Atterbury has given us service
every day to the total of 17000 miles on
one set of tires.

Yours very truly,

JED/S

Joe Sawyer
MANAGER

—a remarkable record for most trucks, but
commonplace for the Atterbury.

The Atterbury that made that record is still on the
job, early and late, winter and summer.

That is the reason why Atterbury Dealers are always good
friends with Atterbury Owners—that is why Atterbury sales
are *jumping*.

What is behind Atterbury Ability? Here are a dozen reasons:—

Continental Motor	Timken Axles
Brown-Lipe	Archibald Wheels
Transmission	Spring Perch Springs
Brown-Lipe Clutch	Driggs-Seabury
Spicer Universal Drive	Truck Frames
Zenith Carburetors	Eisemann Magnetos
Long Mfg. Co.	Pierce Governors
Radiator Cores	

ATTERBURY MOTOR CAR CO.
Elmwood and Hertel Avenues, Buffalo, N. Y.

DEALERS: Investigate the money-making,
friend-making Atterbury dealership quickly.

Mail this coupon!

to investigate the money-
making, friend-making,
Atterbury dealership.

Name.....

Address.....

Clip and mail to Atterbury
Motor Car Co., Buffalo, N. Y.

ATTERBURY

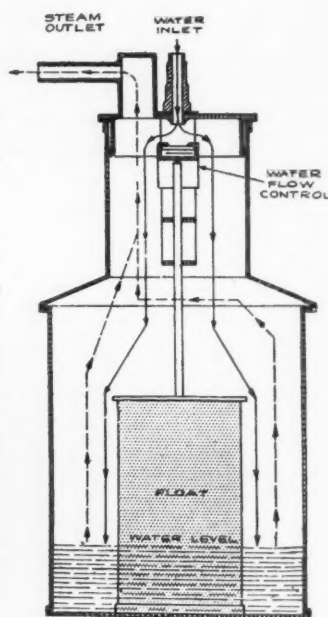
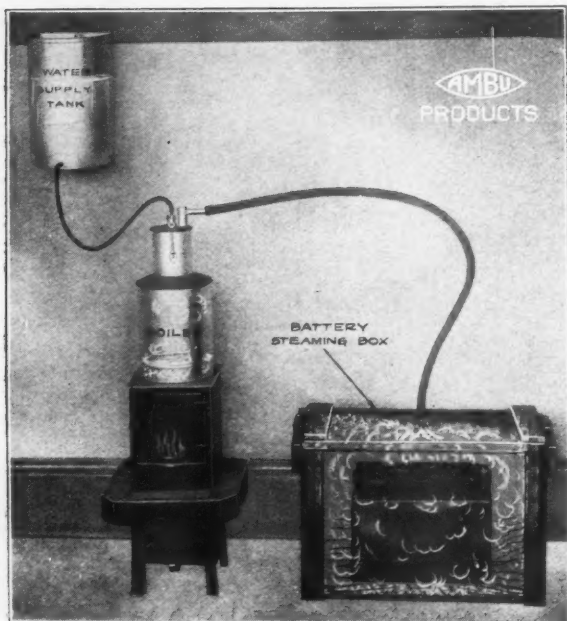
When Writing, Please Say—"Saw Your Ad. in the CCJ"

Peers Ambu Battery Steamer

The Peers Ambu Battery Steamer, made by the American Bureau of Engineering, of 1018 Wabash Ave., Chicago, Ill., is an apparatus for softening the sealing compound on starting and lighting batteries by means of steam, so that the battery may be opened easily and quickly and without the use of a gas flame or blow torch.

The use of this apparatus practically eliminates any possibility of damage to the delicate parts of a battery—and also guarantees a clean, quick job in removing the

The supply tank is also made of galvanized iron and is connected to the generator by means of a small hose. It is placed a foot or two higher than the generator so that the water will flow into the latter by gravity. The steaming box is a stout wooden box and is steam tight throughout. Steam is introduced through a connection in the cover by a steam hose which leads to the generator. The box is made acid proof both inside and outside, so that it is not damaged if acid should be spilled on it accidentally.



Illustrations Show the Outfit in Operation and a Sectional View of the Generator

sealing compound. It consists of only three parts, the steam generator, the steaming box, the water supply tank.

When a battery is to be opened, the connectors are first removed and the battery then placed in the steaming box and steam passed into the box for about 15 min. This makes the steaming compound so soft that it can be removed readily with the point of a screw driver.

The steam generator or boiler is made of heavy galvanized iron and furnishes the steam. A sectional view is shown herewith. Water enters the generator through the cover, which is connected to the water supply tank by a rubber hose. The amount of water in the generator is always kept to a low level so that steam is quickly generated, and is regulated by the motion of the float shown in the illustration. When water reaches the height of about 3 in. the float rises and closes the valve through which the water enters.

The generator is set on a gas, oil or gasoline stove and because of the small amount of water in it, steam is produced very quickly. As the water boils away, the float lowers, opens the valve and allows more water to enter. Thus the level of the water is maintained constant as long as the supply in the tank lasts, and a continuous supply of steam is available in several minutes after the heat is applied to the bottom of the generator. For the average repair shop, the supply tank need be filled but once a day, and the entire apparatus requires absolutely no attention after the stove is once lighted.

Leatherwove is a new product of L. C. Chase & Co., Boston, Mass. It is an upholstery fabric, the foundation of which is a specially woven cotton material made of uniform strength throughout and in various weights and construction suitable for different purposes.

The cotton material or gray goods is first dyed in various shades to harmonize with the color of Leatherwove compound that is to be applied later. This cloth base is then dried and pressed.

In the coating room, several coatings of Leatherwove compound are applied. Nitrate of cotton is the basic constituent of this compound. During the process of coating Leatherwove is subjected to a special treatment to make it pliable and leather-like.

After this treatment the goods are embossed and subjected to great pressure and a definite degree of heat, which is said to insure a firm impression of the effect desired and also to add to the pliability and leather-like feeling of the material. Waterproofing solvents are worked over the surface to insure the material against the action of the elements.

After proper drying, Leatherwove is re-rolled and carefully examined for deficiencies, put up in rolls of uniform length and wrapped for shipment.

This product comes in a variety of shades, qualities, and weights. It is suitable for use as ambulance upholstery, and for other purposes in connection with Government needs.

"Velvet Recoil Deadner"

The John W. Blackledge Mfg. Co., 341 East Ohio St., Chicago, Ill., is bringing out a new device designed to overcome recoil-shocks. It is a patent recoil check used to check the rebound on the fronts of automobiles and on the rear of cars having cantilever springs.

The device will be known as the Velvet Recoil Deadner. It is said to work positively and quickly and yet to gradually deaden the shock on the recoil of the spring. The device answers an entirely



Cut-away View of "Velvet Recoil Deadner" Attached

different purpose from that of the cushion-type Velvet shock absorber, which the Blackledge Co. has been making for several years, the function of which is to make a stiff main spring ride "soft and easy." The Velvet recoil deadner checks the up-throw of the car and makes the car ride easy.

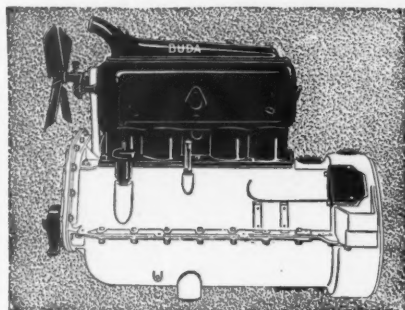
As in the illustration, the cam (A) is fastened on the pivot bolt (B). The drum (E) revolves on pivot bolt (B). The spring (C) is fastened to the inside of the drum (E), and when the car goes upward the drum (E) revolves on pivot (A) and the spring (C) travels up on cam (A) and immediately begins to check the rebound of the car.

On the opposite side of the device another spring winds the drum up and the spring (C) slides down on the cam as the body of the car returns to its normal position.

YOUNGSTOWN PRESSED STEEL CO., Youngstown, Ohio, has recently purchased the fabricating departments of the Sharon Steel Hoop Co. and its subsidiary, the Youngstown Iron & Steel Co. These departments will, for the present, be operated in the quarters which they now occupy, but a new plant with increased capacity will be built later. The company is capitalized at \$1,000,000. W. W. Galbreath heads the new company and G. F. Danielson is associated with him.

Wohltrab Gear Co. has recently been organized at Racine, Wis., with a capital of \$75,000. The firm is at present occupying a plant at Corliss, Wis., but will shortly remove to Racine.

"LET US HAVE THE FACTS"—No. 11



TIMING GEARS

The manufacture of fine timing gears requires both extreme care and complete equipment. The gears must be tough in body to withstand the severe strains of high speed, and at the same time the surfaces of the gear teeth must be extremely hard and most accurately cut to reduce wear to a minimum, and above all to run silently.

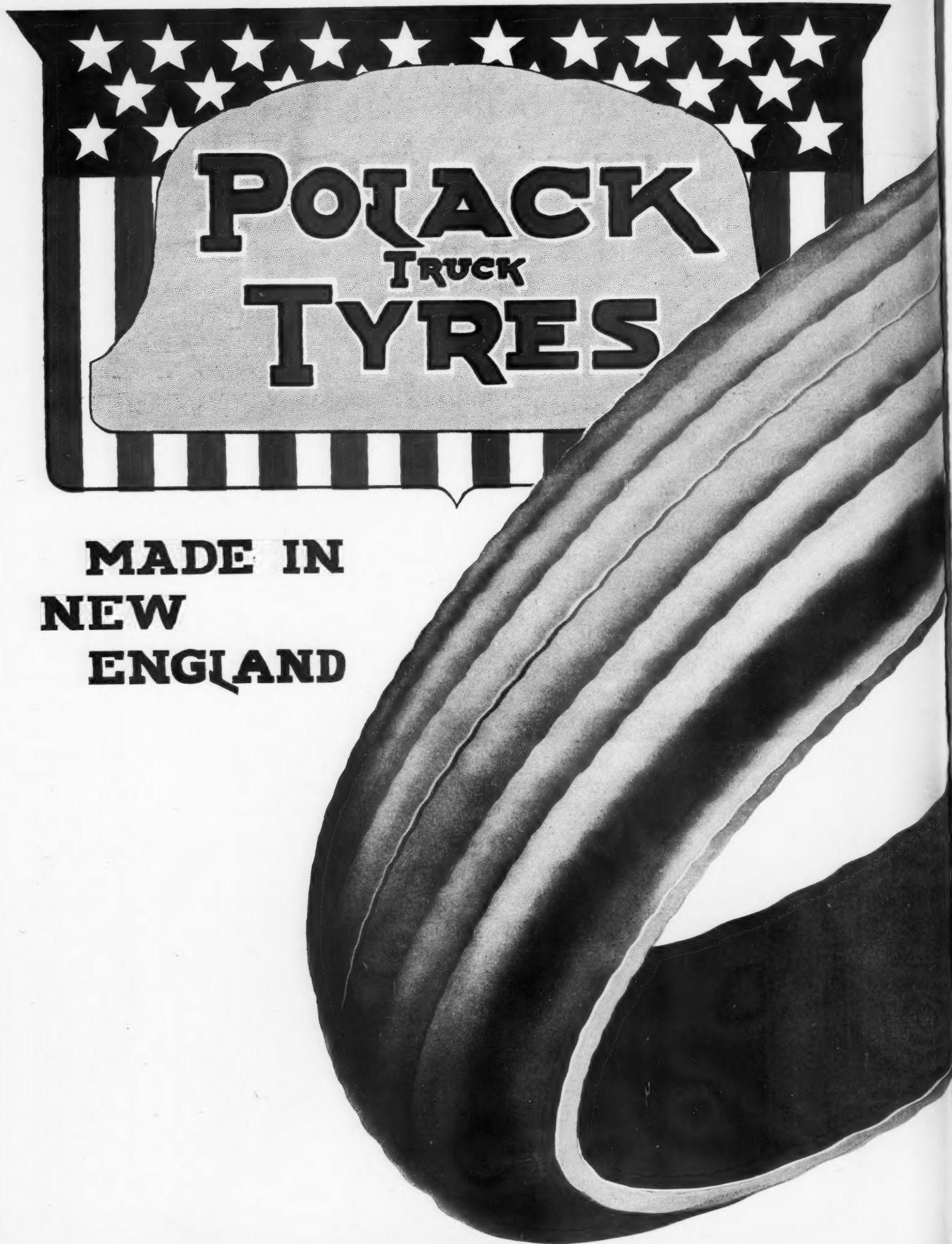
The BUDA MOTOR

timing gears are exceptionally well made. They are *cut helically* on automatic hobbing machines, gear centers being *maintained* with extraordinary accuracy. *Special equipment* is used to insure proper machining. As a result Buda timing gears are practically noiseless at all speeds, and show but the slightest sign of wear after long use.

This is not a special process—simply a more than usual insistence on perfection of manufacture, according to the *Buda policy*, in *all parts of the motor*. The more you know about motors, the better you like the Buda.

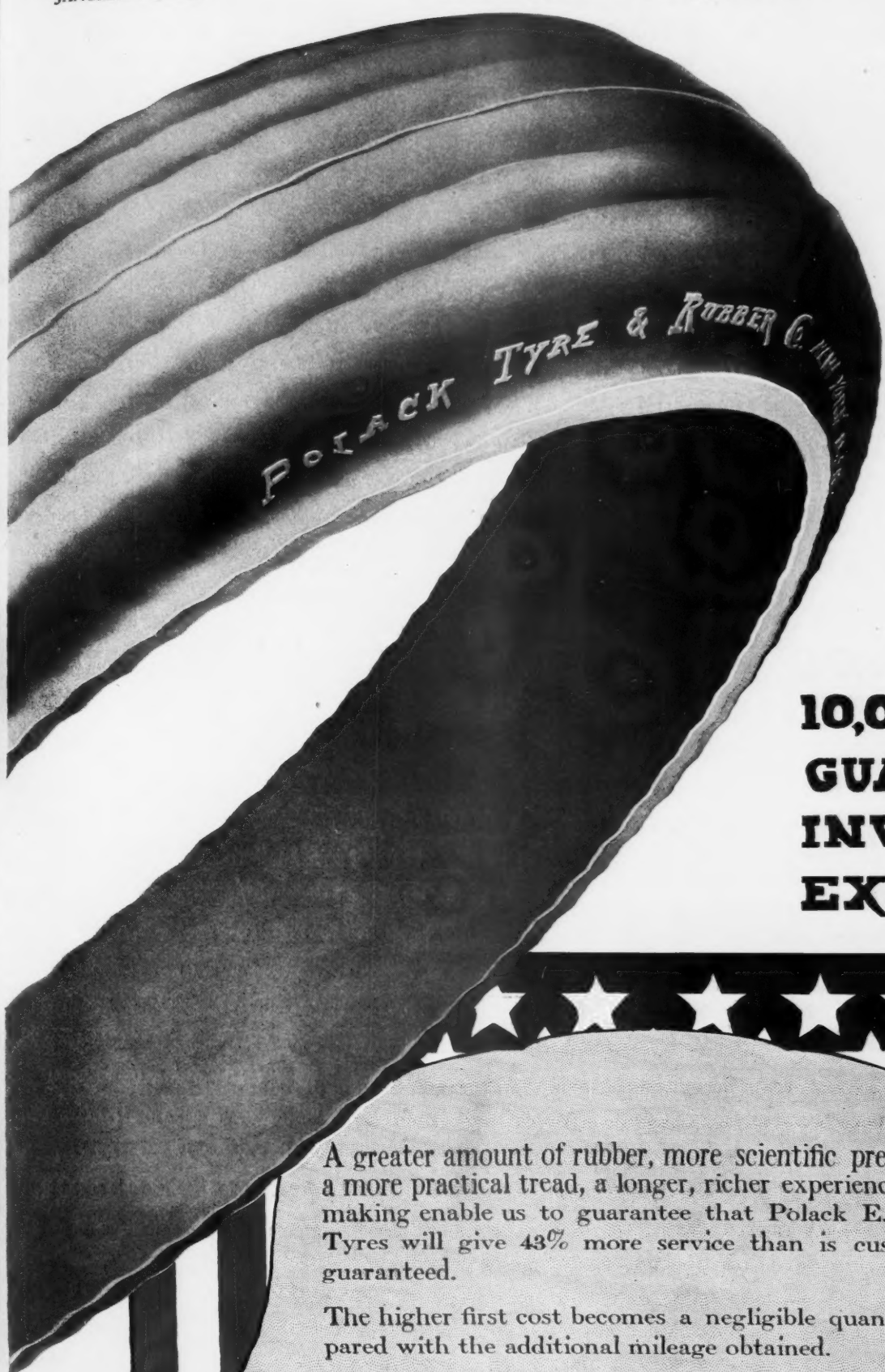
THE BUDA COMPANY, HARVEY^(Chicago Suburb) ILL.





**MADE IN
NEW
ENGLAND**

When Writing, Please Say—"Saw Your Ad. in the CCJ"



**10,000 MILES
GUARANTEE
INVARIABLY
EXCEEDED**

A greater amount of rubber, more scientific preparation, a more practical tread, a longer, richer experience in tyre making enable us to guarantee that Polack E. S. type Tyres will give 43% more service than is customarily guaranteed.

The higher first cost becomes a negligible quantity compared with the additional mileage obtained.

POLACK TYRE & RUBBER CO.

Broadway & 62nd St. New York

Branches and Service Stations in Principal Cities

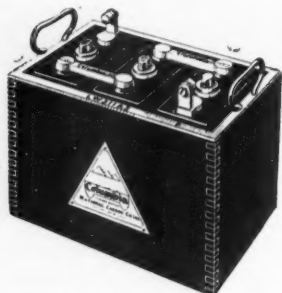
Columbia Storage Battery

The new Columbia Storage Battery has two important features—the honeycomb grid construction and the universal terminal.

The honeycomb grids are designed to give a uniform conductivity and the greatest resistance to buckling for a given weight. Pellets interlock and the grid is reinforced throughout.

The Columbia terminal is a tapered post upon which a ring-ended adaptor can be turned to any direction. When the adaptor is turned to the angle required for the installation, the nut on the top of the terminal post is tightened, thus clamping the adaptor securely in position. The terminal is easily adjusted without the need of tools. The positive and negative posts of the Columbia battery are of different sizes and are marked "P" and "N" respectively, so that there is less possibility of incorrect connection.

The separator container holds the separators securely so that they can not be dislocated and allowed to float, causing short circuit. The vent plugs are of the bayonet-catch design. By placing the feet of the negative plate on different jar ribs than those of the positive plate, short-circuiting of the battery, due to the plate



Battery of National Carbon Company

sediment bridging across from the negative to the positive plate along the jar rib, is said to be prevented.

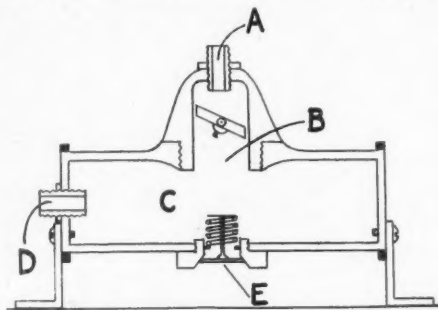
By reason of the universal terminal, only five types of Columbia batteries are needed for over 300 different makes and models of cars. This new battery is being made by the National Carbon Co., Inc., Cleveland, Ohio.

Vapogas System Supplies Moist Air to Engine

The Vapogas system is designed to make and supply to the engine, through the intake manifold, a correct amount of vapor at all times. The device consists of a cylindrical tank made of aluminum at the top of which is inserted a "gas dome" B, in which a butterfly valve automatically controls the feed of vapor to the engine. At the bottom of the tank a valve E is inserted which allows all water and waste to escape. The valves are brass and the connections are of copper and brass.

The tank is bolted to the pan of the car through two brackets, which are adjustable. A section of 1/4-in. copper tubing connects the tank at D to the overflow pipe of the radiator and at A to the intake manifold. An air valve is inserted in the radiator cap to allow ingress of air. The

vapor from the top of the radiator is drawn into the tank at D through the overflow pipe connection. A definite decreased air pressure in the tank is maintained by the suction of the engine and the action of the valve on the radiator cap, which opens only after a certain amount of suction. This partial vacuum causes the vapor to



Section of the Vapogas Tank

rise into the gas dome B, from where it passes through the butterfly valve into the intake manifold through valve E.

When the vapor comes into the cylinders it is said to give up part of its oxygen, which tends to combine with the carbon in the cylinder, producing carbon dioxide gas, which passes out with the exhaust.

Welsh Patent Expansion Plug for Closing Core Holes

The M. D. Hubbard Spring Co., Pontiac, Mich., makes steel, brass, and bronze expansion plugs, the analysis of the latter being the same as that of the bronze used by the United States Government for work where resistance to the corrosive action of salt water is required. Aluminum plugs are also made for work where extra lightness is needed.

These Welsh patent plugs are used for closing all openings that it is desired to permanently seal by a tapered, cupped, or threaded plug, such as: core holes in engine cylinders, in intake manifolds, in crankshaft cases, in the crankshaft when drilled for oil circulation, in steering gear cases, in the engine governor ball, etc.

In stock are carried the leading sizes of steel plugs, ranging from 1/4 to 3 3/4 in. diam., which sell at from \$3.10 to \$64.50 per thousand. Latest prices on aluminum, brass and bronze plugs will be quoted upon application, as the market prices of these materials vary so much from time to time.

In applying, the core hole is drilled to the proper depth and diameter to suit the

expansion plug, which is then inserted and expanded by a blow of a hammer or flat punch. The drilling should be done accurately with a fluted drill having a face as near straight as possible without destroying



Welsh Patent Expansion Plug

its centering function. The plug will not fit satisfactorily if the hole is not round, smooth, and free from chatter marks.

Among the numerous advantages claimed for these patented plugs are: time saving, better appearance, lightness of lugs, inexpensiveness, and the preclusion of spoiled castings through threading, and of imperfect or leaky threads. When properly applied the plugs are said to resist pressure of from 200 to 300 lb.

Detroit Gear Price Increase

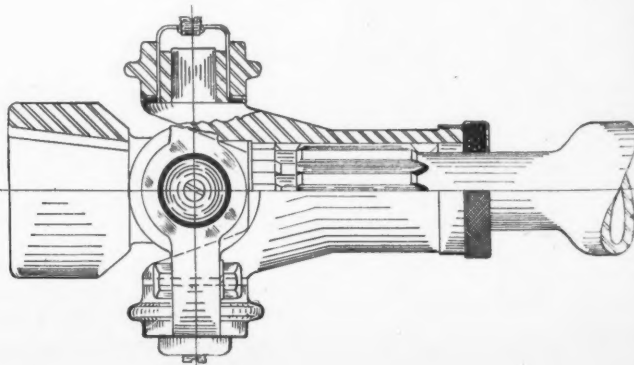
The Detroit Radiator and Specialty Co., of 961 Woodward Ave., Detroit, has announced an increase in price of its Special Gear ratios for Ford cars, the price having been increased from \$15 to \$16.50.

Acme Universal "Oiltite" Joint Introduced

The Acme Universal Joint Co., of Kalamazoo, Mich., is placing before the trade a new universal joint, the outstanding feature of this well-known maker's new product being the fact that it can be operated many thousand miles without loss of oil to any appreciable extent and therefore would require attention not oftener than once a year. All vital parts of this unit are made from drop-forgings and the maker states that it will operate at a greater angle than is customarily necessary.

Each journal has its oil-retaining cup, inserted in the transmission ring. The journals, being integral parts of the yokes, are hardened and ground, and operate in steel bushings which are treated and finished in the same way and fit the oil retainers. The latter are extended far enough beyond the bushings to form an oil compartment of sufficient capacity for an entire season's operation. Ease and simplicity of assembling are other features which stand forth prominently.

Section of the Acme Universal "Oiltite" Joint





The United will give
you low cost per ton mile

THE international reputation of United Trucks for unusually low cost per ton mile is due to a combination of reasons. *First*, the worm-gear drive which eliminates waste by insuring maximum power delivered to the rear wheels.

Second, every unit of construction from power plant to springs is of the highest grade material, and proven in efficiency. This insures *low repair expense*.

Third, the United power plants are the most efficient motor-truck engines made. They have the reserve power for every emergency.

Write for catalog and compare the United specifications with those of *any* truck at *any* price! Send for catalog today.



United Trucks are built
in 2-ton, 3½-ton, 4-ton
and 5-ton sizes.



UNITED TRUCKS

2-ton	-	-	-	\$2350
3½-ton	-	-	-	\$3150
4-ton	-	-	-	\$3450
5-ton	-	-	-	\$4250

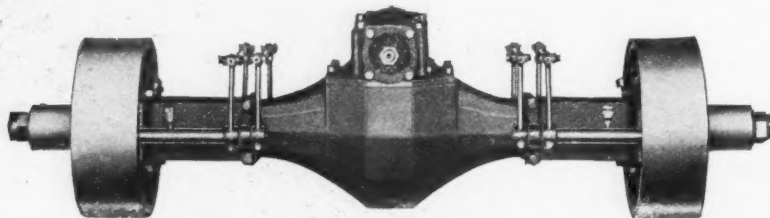
UNITED MOTORS COMPANY
676 North Street Grand Rapids, Michigan

Worm-Drive Liberty Axle Offered in Several Capacities

A great deal of interest has been aroused in truck manufacturing circles and among engineers, by the advent of the new Liberty Axle, manufactured by the Wagner Axle Co., Anderson, Ind.

The Liberty Axle, although new to the market, is not in any way an experiment

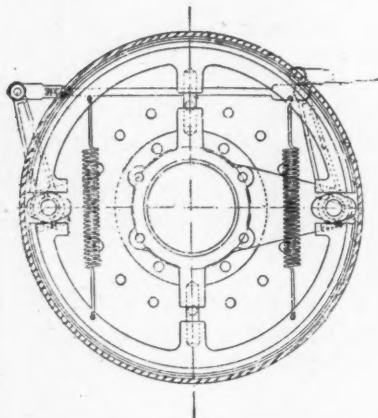
ing in tires, time and labor and the protection against possible breaking of axle, can also be readily appreciated. The worm is $3\frac{1}{2}$ per cent nickel steel, the gear of special phosphor bronze and the differential case of cast steel. The differential gears rotate in an oil bath.



New Semi-Floating Worm-Drive Liberty Axle of the Wagner Axle Company

nor does it embody any radical ideas or wide departures from the proven and accepted principles of truck axle construction. Rather, it is a combination of those features in axles which have proved the best in actual service.

It is a worm gear axle of the semi-floating type, equipped with the M & S differential, which is designed to eliminate spinning or skidding and make it practically impossible for a truck to "stick." The sav-



Dual Double-Expansion Brake Mechanism

An interesting feature is the worm carrier—a solid steel casting containing the worm gear and differential. This casting is provided with two ears so that with the removal of eight bolts, it can be taken out of the axle housing and any adjustment easily made.

Double-Expansion Type Brakes

The brakes are of dual internal double expansion type, providing the greatest possible braking surface and have been designed for the exclusive use of the Liberty axle. Liberty axle brakes have been proven to be 95 per cent efficient.

Axles are made of chrome-vanadium steel, heat-treated, of very large proportions and built to withstand severe usage. Extra large ball bearings are used.

Liberty axles are made in $1\frac{1}{2}$, 2, $3\frac{1}{2}$ and 5-ton sizes.

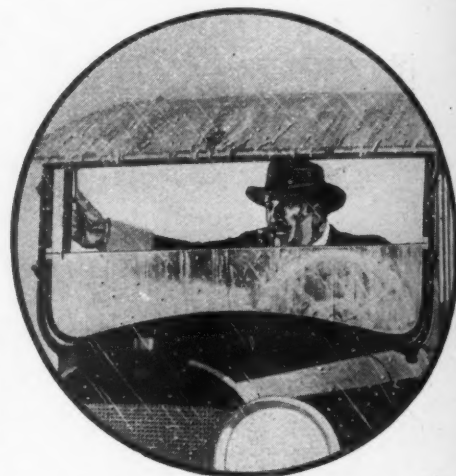
The Wagner Co. has been recently organized with a capital of \$2,000,000 and occupies a plant at Anderson, Ind., occupying over $14\frac{1}{2}$ acres in area. This ground is occupied by factory building fully equipped for the manufacture of axles.

Mr. H. P. Harding, well known in the truck field, is president and general manager.

Marvel Windshield Cleaner

A windshield cleaner is one of the latest products of the Marvel Accessories Mfg. Co., Cleveland, Ohio. It cleans the entire upper part of the windshield so that not only the driver, but the passengers as well, can look through clear, clean glass, even when driving in the stormiest weather.

The construction of the cleaner is extremely simple. It may be attached by anyone in a minute or two, and once in place it needs no further attention. The

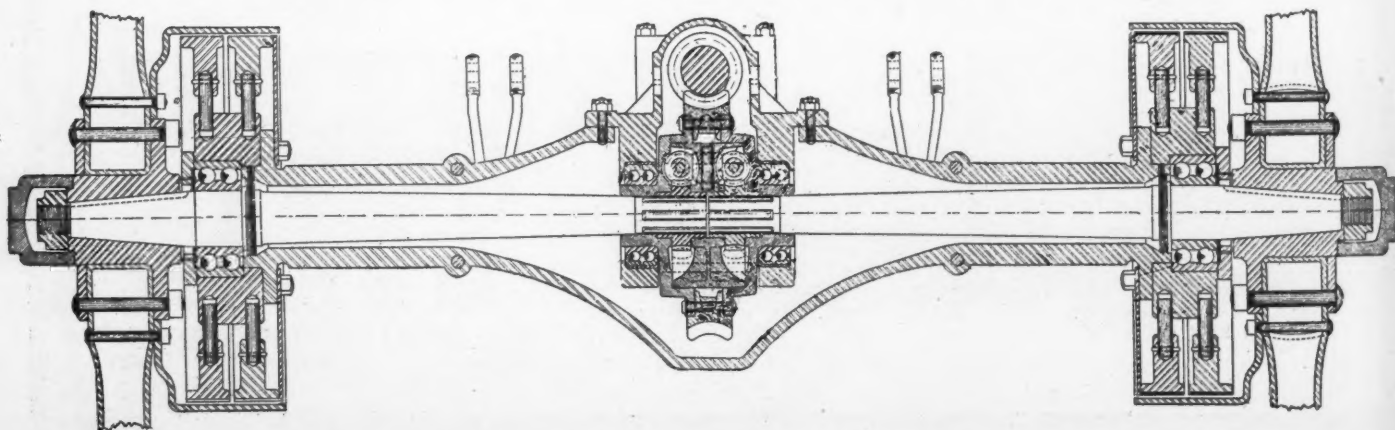


How the Marvel Windshield Cleaner is Used

cleaning strip is automatically held in place with just the right pressure to clean the glass perfectly. Five roller bearings make it very easy to operate. It sells for \$1.50, and is made to use on all makes of cars.

Like all other Marvel accessories, the new windshield cleaner will be sold through jobbers only, but to introduce it to the trade one will be sent to any bonafide, established dealer who will send 10 cents to prepay the postage.

COLLIER MOTOR TRUCK Co., Sandusky, O., has selected Bellevue, O., as the site for the manufacturing plant in which the Collier light delivery truck will be produced. The firm is capitalized at \$250,000. Production in the new plant will start shortly, most of the machinery having already been removed from Sandusky to Bellevue.



Section of the Semi-Floating Liberty Axle. The Worm is of Three and a Half Per Cent Nickel Steel and the Gear of Special Phosphor-Bronze

The dotted line
shows the
Super-Size

**SIMPLEX
SOLID
TIRES**

Actual size of a
5" Simplex
Super-Size
Truck Tire

SUPER-SIZE—SUPER-MILEAGE

Solid motor truck tires are now being made at Batavia, N. Y., of such surpassing size, strength and wearing qualities that they have created intense interest throughout the motor truck field.

Unprecedented mileage records are being made on them—*first* because of their great size, being fully 25% thicker than other tires selling at a similar price—*second* because of the remarkable wear resisting qualities of the rubber stock used.

Simplex Super-Size Tires they are called. Three years ago the first of these great tires were produced at Ossining, N. Y. They proved to have strength, resiliency and wearing qualities never equalled in truck tire construction.

At first little was said about them. They were put into service under the most difficult conditions to be found in the country. Many went on to the largest truck installations in the metropolitan district of New York City. Others on to the largest brewery trucks we could find.

As to the results of these trials we need say little more than that these big truck users who put Simplex Tires on for these trials now practically without exception use them as exclusive equipment.

The business outgrew the Ossining plant. Last August the Simplex Company moved into a fine new plant at Batavia, N. Y.

Now, with this new plant filled with modern machinery we are ready to prove to the entire industry that a long step in advance has been made in truck tire construction.

A Better Tire and More of It

In buying Simplex Super-Size Tires you get two distinct advantages. You get a rubber stock that wears better than tire users have been accustomed to. And most important of all—you *get more* of it.

Instead of holding to the limits of cross sections which seems to be common among truck tire makers we have put fully 25% more rubber stock into every tire.

This means a full 25% more rubber to wear through—25% more resilient rubber stock to protect your truck from the jolts and jars of service.

Remember the name. Simplex Super-Size Solid Tires.

Branches and service stations in most of the large cities. Our dealers proposition is extremely attractive and will prove very profitable to you. Write direct to factory for particulars.

Simplex Rubber Company of America, Inc. Batavia, N. Y.
New York Branch, 1928 Broadway

SUPER-SIZE

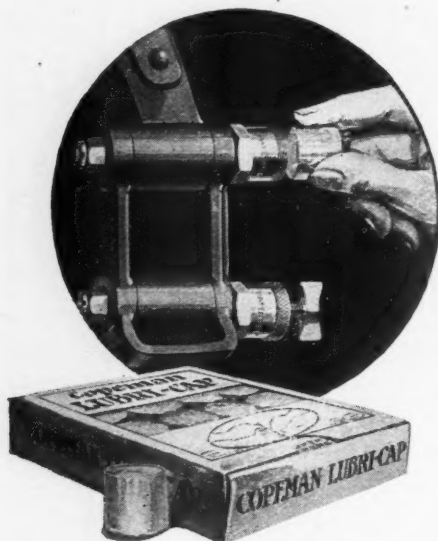
Copeman Lubricating System

Claiming to have solved an irritating problem as old as the motor car industry itself, the Copeman Laboratories, Inc., of Flint, Mich., has just placed a new product on the market. It is a new method of handling the greasing problem, eliminating the dirty "dope" bucket altogether and also all the usual troubles of the old fashioned grease cup.

The maker does not term its product a cup, nor a grease gun, but a combination of both. It forces the grease into the bearing with great pressure and is far more convenient than any ordinary grease cup, therefore combining all the supposed advantages of both the cup and the gun.

The main feature of the Copeman System is the method of handling the grease. It is enclosed in a tough paper capsule which not only eliminates waste, but also makes it clean to handle. The top of the Copeman "Lubri-cup" is removed and a complete capsule is inserted. The top is replaced and every particle of the grease is forced into the bearings where it will lubricate. A turn of the handle by the fingers will bring the maximum pressure required either for forcing the grease to the reciprocating surfaces, or to dislodge any foreign matter that has been impeding the path of the grease.

The cleanliness is a mighty interesting and attracting feature for the motorist. Not only from the standpoint of the man putting in the grease, but also considered in regard to the welfare of the car. The



Lubri-cup, and Capsule and Container

grease cup is nearly always located in the places where there is mud and dust and the ordinary open style of grease cup is certain to take considerable foreign matter into the bearings. The Lubri-Cap, as the Copeman capsule is termed, allows for no chance of any grit or dirt reaching the parts which are being lubricated.

The intention of the Copeman Laboratories is to supply these outfits to manufacturers of automobiles and motor trucks as well as to the dealers for consumer needs. Economy is another reasonable claim for the Copeman System, because no grease can be wasted.

Kelly-Springfield Truck Tires

Two new Kelly-Springfield truck tires have been recently announced, these being the Liberty tire and the Caterpillar tread tire. The former is a new 10-in. solid steel base tire, standardized by the S. A. E. and adopted by the War Department. It



On the Left is the Caterpillar Tread and on the Right the Liberty Tire

is now being manufactured for use upon Government trucks. The Caterpillar tread tire is designed for heavy-duty trucks, have been tested under the most severe service and have yielded good mileage and unusual tractive qualities.

Kim Torsion Springs, Light-Running Shock Absorber

It is a well-recognized fact that springs on commercial vehicles must be so designed as to afford maximum resiliency at loads ranging from 75 per cent to 150 per cent or more of their rated capacity.

It is thus evident that a motor truck traveling without load is subjected to much more severe vibration than it would be if traveling over the identical road surface with a full load. The springs, which under full load conditions are quite flexible, show practically no deflection whatever when the vehicle is without load, and therefore have hardly any appreciable effect in protecting the power plant and the driver against vibration.

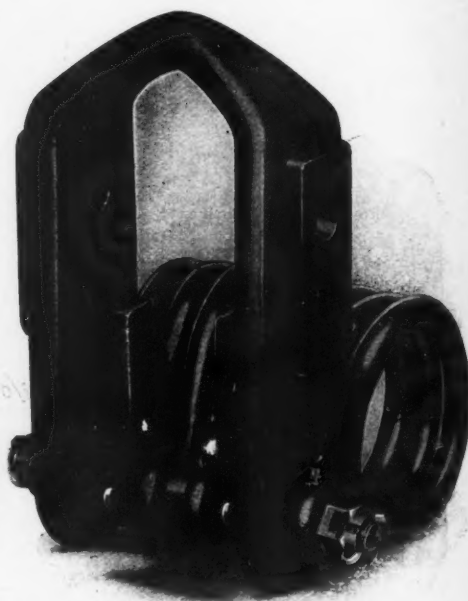
The damage arising from this vibration under light-load conditions is considered even more serious than heavy overloading, because the continued jar is transmitted from the uneven road surface directly to the power plant of the truck through the heavy springs as though there were no springs on the truck at all.

As a means of absorbing this vibration when the truck is traveling without load and the regular springs cannot act of themselves, the Kim Torsion Spring has been designed.

This device is installed on the truck in place of the spring shackles at the rear ends of the front and rear springs. It carries the light load only—when the truck is loaded up to its rated capacity the Kim Spring is automatically locked out of action, the load then being carried by the service springs with which the truck is regularly equipped.

The essential element in the design of these torsion springs is a pair of heavy coils, mounted in a yoke which has two members—a riding member and a stationary member. One end of each coil is attached to the riding, and the other to the stationary member. The entire assembly is so designed that if through accident, either or both of the coils should be broken, the assembly would remain otherwise intact and just as serviceable as the regular spring shackle which it replaces.

Although the Kim Spring is not intended to act as a shock absorber in the ordinarily-understood sense of that word, it is true that it dampens the upward rebound of the chassis due to the



Kim Torsion Spring for Light Running]

reaction of the service springs, and on the return transfers the load gradually and easily backs onto the service springs.

The Kim Spring is at present made in types for service on the following commercial vehicles:

Autocar; Hudford; Maxfer; Reo, 3-ton; Studebaker, light delivery; Packard, 4-ton; Pierce-Arrow, 5-ton; Vim—other types for use on a variety of other motor trucks are in course of production.

List prices are from \$40 upward, dependent upon the type and size of truck to be equipped.

The Kim Spring is made by the Kim Distributing Co., Boston, Mass.

WOODWARD & ROWE, San Francisco, Cal., manufacturers of Ralston and Woodward truck attachments are opening a Chicago branch for the distribution of their products.

REMY ELECTRIC CO., Detroit, Mich., has established a sales department for the merchandising of electric equipment for tractors, at 1120 S. Michigan Ave., Chicago, with G. B. Stone in charge.

CHILTON TRACTOR JOURNAL

Review of Progress of the Tractor

By SAMUEL C. VAIL

ALTHOUGH the tractor has always been closely allied with plowing, the first self-propelled steam traction engine, the prototype of the modern gas tractor, was designed not for plowing purposes primarily, but as a means of drawing carriages over ordinary dirt roads, carrying both freight and passengers. As early as 1770 a French army officer constructed a traction engine, using the discovery of the steam engine by James Watt as the basic feature.

For nearly a century after the discovery of the steam engine nothing was done by it to relieve one of man's heaviest tasks—that of turning over the soil to produce a crop. The invention of new tillage and harvesting machinery in the first part of the nineteenth century gave an impetus to the development and solution of steam power plowing.

The earliest applications of mechanical power to the plow were made in England. After many years of experience and designing, encountering all the disadvantages of the clumsy and expensive steam traction engine, it was at last decided that as a means of power on the farm, the steam engine was a failure as far as economizing and profit were concerned.

Steam Tractor Paved the Way

However, the experience derived from the application of steam power to farming and the possibilities that were only too apparent, prepared the way for the innovation and rapid success of the light gasoline and kerosene tractor.

By the steam traction engine the way had been paved for the gas tractor. The task of applying mechanical power to the plow had been attempted, and had met with a considerable degree of success. The perfection of the internal combustion engine for other purposes, turned engineers' minds to its use as a source of power for tractors. Farmers, many of them, had been educated to farming with a tractor. Some of the factors which brought the tractor rapidly into favor for this use were: The demand for motors of smaller units which would be economical; the scarcity and high cost of labor; the inconvenience of supplying coal and water necessary for the steam tractor. Some of the advan-

tages which tractor operators were able to avoid by displacing the steam traction engine with the internal combustion engine were: the necessity of burning and carrying bulky fuels; the inconvenience of hauling water to the boiler; the large number of men required to operate it as well as the necessity of using two to four horses to an outfit.

First Gas Tractors Heavy and Bulky

The first successful internal combustion tractor to be used is said to have been placed on the market in 1903. In keeping with the power requirements of the times the first gas tractors were very heavy and used powerful motors. It is interesting to note that the development of the gas tractor has been the direct reverse of that of the automobile. The first automobiles to be built were small and of light weight construction, while the first gas tractors, as we have observed, were bulky, powerful, and very heavy machines. They were designed to meet the demands which the steam traction engines were fulfilling, that of supplying enormous tractive and belt power suitable to heavy plowing, extensive harvesting, seeding, and hauling operations.

While the steam tractor was developed primarily for belt power, the gas tractor has been developed from the first with plowing as a prime consideration. This was largely the result of the many disadvantages of the steam traction engine for plowing. Although the gas tractor from the first was superior to the steam tractor in many respects, its development was slow and it did not for some time become a real competitor of the steam tractor. The gas tractor has received its greatest growth in the last few years, and its growth has been in many ways phenomenal. One authority says, "The development of the gas tractor has been one of the marvels of the history of agriculture." The company which had built the first successful gas tractor in 1903, had over 2,000 of their machines in successful operation at the close of 1910. A second company entered the gas tractor field in 1907, and from that time forward the gas tractor producers multiplied very rapidly. In 1910 it was generally recognized that the gas tractor had proved its superior-

ity over the steam tractor, and from that time onward, steam was steadily displaced in all territories except those where suitable fuel was cheap and conveniently obtained.

In 1913 there occurred a great event in the development of the tractor. The power-lift plow, which has proven a great aid to tractor plowing, was then introduced. This invention further increased the economical advantages of the gas tractor over the steam by cutting the crew of the plowing outfit to one man. This also made the smaller tractors profitable for use on farms of less acreage than heretofore. The year 1914 marked what might be called the dawn of the era of the small tractor. Previous to the year 1914 large tractors had been sold in great quantities principally throughout the Northwest, where new lands had been cleared and the virgin prairie sod had to be turned. Without a doubt the big tractor performed a great service in this new country. However, they were in many cases an unfortunate venture. They represented an investment of a large amount of capital, some of them being sold at fabulous prices, and they were operated in too many instances by inexperienced men. There were not many operators who knew how to make them pay even the interest on the investment. The farmers lost money on them and the market was flooded with large tractors. Many manufacturers were forced to recuperate by entering the light tractor field, and a variety of designs, characteristic of the many diverging views of inventors, appeared on the market.

Demonstrations Attracted Farmers

In 1915, tractor demonstrations throughout the Middle West began to focus the attention of hundreds of thousands of farmers upon light tractors pulling two to three plows. The motor contests at Winnipeg have done a great deal towards stimulating interest in tractors. As a result of the demonstrations and contests the opinion has been expressed that the heavy-weight tractor has reached as high a stage of development under the present form of machinery as it can reach. Although the opinions of many authorities are that these contests have served their usefulness, there is no question but that they

have greatly stimulated public interest in the light-weight machine.

Recent developments in the tractor have been principally along the line of small outfits designed to meet the demands for power on farms of medium size. Among the conditions which have favored the development of the light-weight machine have been: higher horse and labor cost; greater familiarity with the gas engine on the farmer's part; a growing inclination to plow deeper and farm more scientifically in general. The "all-purpose" machine or the machine which will effectively and economically do a maximum number of operations on

the farm represents the most modern development in farm tractors. Many farmers and authorities of today maintain that the light-weight tractor must be very versatile in order to make it a profitable investment on the small farm of from 100 to 200 acres.

There is great optimism in the minds of tractor manufacturers and others as to the prospects of the immediate future. Magazine articles abound with expectancy of big things and indications seem to be that such hopes are not ill-founded.

With the tractor designed for medium size farms the industry is now beginning

a period of prosperity which bids fair to rival that of the automobile industry. Conditions brought about by the war have given the tractor a golden opportunity to prove its worth. The tractor has in some cases been forced upon the farmer, so to speak, but where the tractor has been adopted it has proven its superiority over old methods and it is rapidly establishing an important and permanent place for itself in agriculture. Also, with the small light-weight tractor, the internal combustion engine is apparently starting a new chapter in the history of its usefulness.

S. A. E. Discusses Electrical Equipment for Tractors

At a meeting of the tractor division of the S. A. E. Standards Committee held recently at the Radison Hotel, Minneapolis, Minn., the advisability of equipping tractors with electric starting, lighting and ignition systems was discussed. Over 100 members were present at the dinner which followed the meeting and which was followed, in turn, by a professional session of the Minneapolis section in the evening.

The advantages of equipping tractors with electrical ignition systems were presented by A. F. Williams, of the K-W Ignition Co. J. A. Gelzer, of the Wagner Electric Co., spoke on electrical starting and lighting systems. Following the reading of these papers a lively discussion was conducted by the members. The necessity for furnishing tractors with an easily operated starting system on account of the war necessity of women and perhaps maimed soldiers having to operate farm tractors was one theme of discussion.

A standard form of specifications to be used in catalogs was adopted at the meeting. The purpose of this form, which embraces the various mechanical specifications which are most useful, is to simplify the catalogs, thus rendering them more valuable. Samples of several designs of couplers for tractor drawbars were shown, this being one of the standardization problems on which the division is working. It was decided to get the opinions of tractor makers before taking any action upon them.

This all-day session, as well as the evening meeting, were presided over by Dent Parrett, the new chairman of the Tractor Standard Division and president of the Parrett Tractor Co., Chicago, Ill. Several representatives of western universities were present and took part in the discussions.

Increase in Number of Tractors in State of Kansas

When the annual state census was taken March 1, 1917, Kansas had 4,504 farm tractors. This number does not include sales made during the 1917 selling season. The number of tractors registered during the previous year was 3,932, so that the present registration shows an increase of 14.5 per cent. The central

third of the state, which includes the great wheat belt, has 2,444 tractors, or 54 per cent of the total. Eastern Kansas, which is the section of the greatest diversified farming, is becoming more interested, and now has 1,777. All counties having more than 100 tractors are located in the central third. McPherson is the banner county, with 143, followed in order by Reno with 138, Ella 136, Pawnee 123, Rush 111, Varton 110, Sedgwick 109 and Sumner 104. The distribution of the machines indicates that tractors are being adapted to the various systems of farming to the small as well as the large farm, to diversified agriculture and the single crop plan which is followed in some sections. The state tax commission places the average value at \$643, making a total investment of \$2,895,340.

Tractors at State Exhibit

At the annual exhibit of Pennsylvania farm products to be held at Harrisburg, Pa., January 21-24, ten of the leading farm tractors manufactured in America will be shown. Secretary of Agriculture Patton believes that the merits of mechanical labor savers should be emphasized, and the 10,000 or more farmers who will visit the show will be given an opportunity to gather much valuable information on the question of intensive farming. Farmers are realizing more and more the advantage of using tractors and numerous machines have been ordered for spring delivery. It is expected that they will replace hundreds of men who have entered the government service or gone into industries in the cities. Community ownership of tractors has been advocated by the Secretary of Agriculture. He urges chambers of commerce and business organizations to purchase tractors and hire them to the farmers on a regular schedule and at a nominal fee.

Erd Motor Co., Saginaw, Mich., is completing plans for the expansion of its factory facilities preparatory to bringing out in addition to its present tractor motor, an improved tractor motor which will burn kerosene.

Orders for Tractors Should be Placed Early

There are several reasons why farmers and tractor dealers are urged to order their tractors and farm machinery as early as possible. Among these are the difficulties in securing steel and the shortage of labor, making it necessary to distribute work in the factories over as long a period as possible. Another problem faced by the country in general at the present time, and likely to continue, is the condition of railway transportation lines. To avoid congestion next spring and summer, shipment will have to be distributed through the winter. Figures compiled by a certain tractor manufacturer indicate that 140,000 farm tractors, averaging 10 h.p. each, will be needed to replace the horses taken from farms for war purposes, and since the entire tractor population of the United States is probably not in excess of 80,000 10 h.p. machines, there is prospect of a serious shortage during the coming year. Intelligent sales work by tractor dealers would do much to relieve this situation.

American Farm Tractors Invade Foreign Markets

According to a report from Consul General W. L. Lowrie, the Portuguese Government has ordered twenty-eight American farm tractors which are to be leased by that government to farmers at a daily rental. Ten different makes are represented and it is said that additional orders will be given when the Agricultural Department decides, through experiments, what sizes and styles of tractors are best suited for work in Portugal.

Tractors for Community Use

As a means of overcoming the labor shortage in farm work, Secretary of Agriculture, Chas. E. Patten, has suggested the use of community tractors. According to his plan chambers of commerce and similar organizations are urged to purchase tractors, and to arrange schedules whereby farmers in each section can have their work done, even were it necessary to operate the tractors day and night.

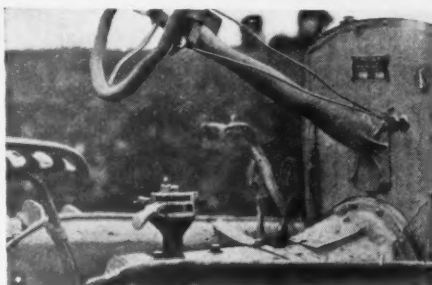
New Model "D" Bates Steel Mule

AMONG the new light tractors that will be ready to take their place in the ranks of farm workers this coming spring, is the new Bates Steel Mule, known as model "D." It was designed and is to be made by the Joliet Oil Tractor Co., Joliet, Ill., a company that has had considerable experience in the tractor field.

The newly designed model has two crawlers at the rear and two wheels at the front, which steer through automobile-type knuckles. This tractor is well adapted to plowing, either in orchards, vineyards, or on hillsides, because it is low and narrow and has a very low center of gravity. The design is said to eliminate side draft, which is especially important in plowing on hillsides where the weight of the tractor is thrown on one side and a tendency to creep down hill must be overcome. The elimination

precludes much of the pitching and tossing experienced when the crawlers go over rough and uneven ground.

The front wheels are steered through automobile-type knuckles. A short turn-



Control Features of New Model "D"

Almost identical with automobile control, except that short turning in soft ground is accomplished through individual brakes on either crawler. For ordinary guiding the steering wheel is used.

A 4 x 6 in., 4-cylinder, overhead-valve engine with a bell-housing is used. The 2-speed transmission is bolted to the bell-housing. The gears are inclosed and run in oil. The shafts are alloy-steel with Hyatt roller bearings. All working parts are inclosed and run in oil. Kerosene is burned, the tank being placed under the hood, where is also a small gasoline tank, the gasoline being used in starting. All parts are easily accessible for repairs.

Philippine Need of Tractors

J. F. Bonner, Correspondent, Manila

Long-continued ravages of rinderpest have greatly reduced the number of carabao in the Philippines. The continued expansion of agriculture in the islands, therefore, will create a good demand for a light farm tractor to be sold at a reasonable price. Purchases of heavy tractors which sell at high prices will be limited to a few of the larger haciendas, but the market for light tractors for small planters and co-operative groups will be general. No such tractor so far introduced into the islands has been satisfactory.

Manufacturers may reach this market either by forming connections with a machinery house now engaged in business in the islands or by sending their own representatives into the field.

Ford Tractor Co., Inc., Minneapolis, Minn., has had John R. Johnston appointed receiver for the corporation by a decree of Judge Manton in the United States District Court.

Peoria Tractor Co., Peoria, Ill., has increased its capital stock to \$1,500,000 and will enlarge its plant to permit the construction of 2000 tractors per year. An order for 300 has recently been received from the British Government.



Showing the Great Flexibility of the Model "D"

It is claimed that the Bates Steel Mule will conform to the roughest ground without any internal strains.

of side draft allows the drawbar pull to work effectively at practically all times.

Features of Construction in Detail

The model "D" Bates Steel Mule is a little less than 9 ft. long and is 60 in. wide from hub-cap to hub-cap. Its height is 52 in.

The front wheels are set just outside the line of the crawlers so that in plowing one of them runs in the furrow, while the crawler runs on firm unplowed ground. This feature makes the tractor self-steering. It is said that once the tractor is started down a furrow, the operator can leave it and it will safely follow the furrow for its entire length without attention. Since the two main drivers always run on unplowed ground, the tractor is not tilted when plowing, which precludes end thrusts of parts.

The two crawlers are pivoted at the rear axle and have a spring-pressure device placed in the fore part of the crawler, between the middle pressure wheel and the front pressure wheel. These crawlers can oscillate up and down, independent of each other, thus affording increased flexibility.

The combination of two crawlers at the rear and two wheels at the front on a small tractor with a short wheelbase

ing radius is obtained through independent brakes controlling the crawlers in the rear. These independent compensating brakes are placed on each side of the differential gears and with them one crawler can be held practically stationary while the other moves around it.

The weight of the tractor, 4250 lb., is distributed so as to give a pressure on the ground of but $3\frac{1}{2}$ lb. per sq. in. The speed range of the Bates Steel Mule, model D, is from $1\frac{1}{2}$ to $3\frac{1}{2}$ m.p.h.

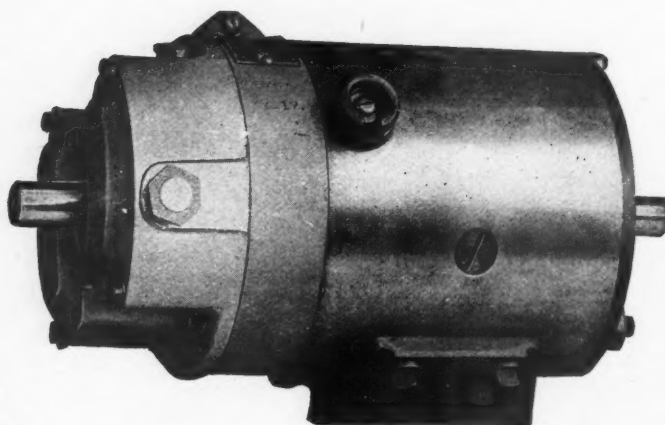


Bates Steel Mule, Model "D," is Compact, Flexible, and Has Strong Drawbar Pull

Westinghouse

STARTING. LIGHTING & IGNITION EQUIPMENT

For the Tractor
A Foolproof Generator



United States Government "Standard Specifications for Class 'A' and Class 'B' Gasoline Motor Trucks," of May, 1917, state in part as follows:

"Generators: The generator shall be of the *fully enclosed*, direct-current, constant-voltage, type, with a *flat or drooping voltage characteristic*, and must have a continuous capacity of 12 amperes. The voltage of the generator when installed on the truck shall be not more than 8 volts at one ampere, and not less than 7 volts at 15 amperes. The voltage regulation must be the same with varying engine speeds, up to governed engine speed.

"Regulation: All voltage and current-regulating devices shall be contained in assembly with the generator. The use of sliding contact devices for current or voltage regulation, and the use of permanent magnets in the construction of generator is also prohibited.

"Charging Speed: The generator shall begin to charge the battery at an engine speed of not more than 500 R.P.M. and at the same time furnish the current necessary for ignition."

These specifications require a generator with very close voltage regulation, and one that will regulate properly even if the battery is disconnected.

The Westinghouse generator for motor trucks has been specially designed to meet these strict specifications. It not only meets them but in some features goes beyond what is actually required.

Westinghouse Electric & Mfg. Co.,

AUTOMOBILE EQUIPMENT DEPARTMENT
Shadyside Works: East Liberty P. O. Station, Pittsburgh, Pa.

When Writing, Please Say—"Saw Your Ad. in the CCJ"

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"NORMA" BALL BEARINGS

(Patented)

Performance must be built into a truck or tractor—it is a thing inherent, not alone in the machine as a whole, but also in every part, every construction detail. Failure of a so-called minor part or minor detail, impairs performance as surely as a breakdown of the machine as a whole.

Failure of ignition or lighting system may result from a failure of a bearing in magneto or light-generator. To safeguard against which, makers of these electrical accessories of the highest grade—of maximum performance capacity—have standardized on "NORMA" Ball Bearings.

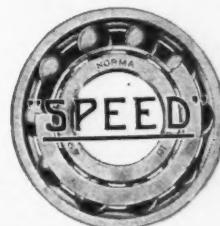
Be Sure—See That Your
Electrical Accessories
Are "NORMA" Equipped

THE NORMA COMPANY OF AMERICA

1790 BROADWAY

NEW YORK

Ball, Roller, Thrust and Combination Bearings



Keep the Roads Open

Do Not Let Snow Block the Government

WE DECLARED war against Germany absolutely confident that the man and material power of the United States would hasten victory for Democracy—nothing must interfere—nothing will.

The President, in his far-sighted proclamation of April 16, 1917, stated plainly the duty of our producers and handlers of necessities.

Our captains of industry realized at once that our President expected them to increase production—then more production and more production—and to keep on increasing production for the requirements of our Government and our people.

As production is increasing and our army is being created, former transportation facilities are being overburdened.

Enormous tonnage of both men and materials is being carried over our highways, for short and long distances, by motor trucks. The use of motor trucks is increasing daily.

The necessary highways must be kept open for continuous automobile traffic every hour of every day throughout the winter—*there must be no delay in breaking any snow blockades.*

Our American army of four million automobile trucks and passenger cars can be of tremendous assistance to the various State and local highway authorities in keeping the roads open for traffic.

Chambers of Commerce, Boards of Trade, Public Safety Committees, enlist your members to assist in hauling snow ploughs, shoveling out drifts, constructing wind-breaks—above all, *keep the wheels moving*; a well-traveled road is hard to block.

We repeat: Necessary highways are those leading to communities that are now being relieved by motor-truck transportation. *These highways must be kept open.*

It is not fair to burden the railroads where it is possible to use motor trucks.

THE AUTOCAR COMPANY, ARDMORE, PA.

Manufacturers of "The Autocar Motor Truck"

INCREASED
PRODUCTION
NECESSARY TO
VICTORY

MOTOR
TRUCK
RELIEF

KEEP HIGHWAYS
FREE FROM SNOW

CIVIC
RESPONSIBILITY